





THE SLEEPING CUPID.

The little god of Love is asleep in the lap of the budding woman, while she fingers his chubby hand and looks into the woods with a look part of hesitancy and part of inquiry. It may be that she sees her wooer in the distance and that Love is about to awake.

HOUSEHOLD JEWELS

OR

READY WAYS TO DO THINGS

A Collection of *MOST PRACTICAL, USEFUL AND VALUABLE RECIPES, FORMULAS AND SUGGES- TIONS for EVERY OCCASION*

HOUSEHOLD, MEDICAL, TOILET, COOKING, PHYSICAL, CULTURE, SOCIAL AND BUSINESS TRAINING, AND MISCELLANEOUS DEPARTMENTS FOR EVERY MEMBER OF EVERY FAMILY, IN CITY, TOWN OR COUNTRY, INCLUDING FARMING, GARDENING, ORCHARD, CARE OF LIVE STOCK, BEES, HOUSEHOLD PETS, ETC., ETC., ALSO MECHANICAL AND ARTISANS' HAND BOOK OF INFORMATION

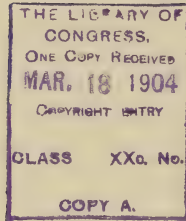
COLLATED AND EDITED BY

H. G. CUTLER

*Author of "Medical Colleges of the West"
and formerly of the Newberry Library*

I L L U S T R A T E D

M



COPYRIGHT 1903
BY
W. R. VANSANT

PREFACE

In a certain sense the publisher has no more right to place a book upon the market which does not contain qualities peculiarly its own than has the inventor to put forth a mechanism which is but the copy of another. The difference, of course, in the situation of the two is that the law restrains the inventor from palming off something spurious upon the public, while the publisher is thrown back upon his sense of honor.

It has, therefore, become a fixed custom for the latter to give his reasons for the publication of his works. Fortunately, in the personal case under consideration, this is not a difficult matter. The publishers do not claim a unique place for their book on the score of originality, since it is common knowledge that Cook Books, Household Physicians, Standard Formularies, Guides for Housekeepers and works for farmers, gardeners and live stock men have been issued by the score. They do claim, however, that they have condensed and classified all the practical information covered by this varied and yet related literature, and made it available to the people—that theirs is truly “The People’s Book”—a library between two covers, showing the man, woman and child of moderate means how to get the most good out of life.

The publishers here take occasion to most heartily acknowledge the assistance which they have received from practical men and women everywhere, who have spoken or written upon the multitude of subjects which this book embraces. Through farmers’ institutes and experiment stations, by means of lectures and contributed papers, through the reports of the United States Department of Agriculture, from the files of periodicals and the pages of published works and from numerous private sources of information, the mate-

rial has been collected. So that while it is impossible to acknowledge here in detail their obligation in this regard, the publishers will call attention to the fact that proper credit in the pages of the work has been generously given to those upon whom the editors have drawn for valuable subject matter. This course has been taken, not only as a measure of justice to those who have thus assisted us, but to enhance the value of the work itself, by thus naming the special authorities upon whom reliance has been placed for the best practical information upon the subjects under consideration.

The illustrations in the work are offered not only as an appropriate embellishment of the pages—that is, as related to the subjects treated in the descriptive matter—but as a means of making the book attractive and even artistic. It is, therefore, believed that the publication will be found worthy of the center table, as well as invaluable as a constant book of reference. Having these two features it must prove the truest kind of a friend—both a guide in perplexity and a giver of pleasure.

The publishers, therefore, present their book to the people as an answer to the most natural of questions which can be asked by humankind in the search for information, and believe that its innate value, as well as its comprehensiveness and attractiveness, will earn for it a large place in the world of practical literature. Their final word is, use it intelligently and you will enjoy it thoroughly.

THE PUBLISHERS

TABLE OF CONTENTS

CHAPTER I

THE MOST IMPORTANT THING IN THE WORLD

	PAGE
Health and Its Universal Interest—Foundation Principles Are Simple— Duty of All to Guard Their Physical Welfare—The Human Body and Its Construction—Proper Food and Its Importance—Clothing and Its Relation to Health—The Bath and Its Importance—Sleep and Its Value—Ventilation of Bedrooms	17

CHAPTER II

GENERAL HEALTH CONDITIONS

Guard Your Water Supply—How Diseases Are Classified—How to Pre- vent Contagion—Care of the Sick Room—Disinfection, Its Impor- tance and Its Methods—Period of Isolation or Quarantine—Duty of All Households Where Sickness Has Invaded, to Guard Others against Its Spread	31
---	----

CHAPTER III

COMMON SENSE IN THE SICK ROOM

Ventilation, Light, Temperature and Furnishings—Care of the Patient— His Temperature and Pulse—Bed Sores—The Characteristics of Fever—Simple Household Remedies—What to Put in a Remedy Cup- board—How to Keep the Baby Well	44
---	----

CHAPTER IV

CONDENSED RULES FOR EMERGENCIES

Poisons and Their Treatment—Bites, Stings, Bruises, Splinters, Cuts, Sprains and Burns—Lockjaw—Poison Ivy—How to Bring the Drowned to Life—Suffocation—Fainting—Sunstroke—Freezing—The Eyes and How to Care for Them—Earache and Toothache—Felons, Warts, Corns and Boils—Home Remedies for Diphtheria—Treatment of Smallpox—Convenient Disinfectants—Sick Room Suggestions—Fruit in Sickness—An Antidote for Intemperance—Milk Strippings for Consumption—Stammering Cured at Home	54
--	----

CONTENTS

CHAPTER V

MISCELLANEOUS RECIPES

	PAGE
Leather Boots Made Waterproof—Glue, Cement, Mucilage and Paste— Ink for All Purposes—Colored Crayons and Pencils—Paint and Whitewash—Soft Soap and Hard Soap—Rats and How to Get Rid of Them—Wood Made Fireproof—To Preserve Wood from Decay— Furniture Repairing—To Harden Lamp Chimneys—A Hundred Handy Suggestions	78

CHAPTER VI

GENERAL HOUSEHOLD RECIPES

Value of System in Housecleaning—Beds and Their Care—Windows, Doors and Woodwork—Moths, Cockroaches and Other Insects— Carpet, Oilcloth and Rug Suggestions—The Care of Wall Paper— Washday Wisdom—How to Wash Flannels without Shrinking Them —Successful Starching and Ironing—Removing Stains from Fabrics— The Care of Fine Laces—Practical Advice from Experienced Coun- selors	100
--	-----

CHAPTER VII

DINING-ROOM, KITCHEN AND BEDROOM

Table Linen and the Dining Table—Laundering Table Linen—Good Use for Worn Tablecloths—Decorating the Thanksgiving Table—Beau- tiful Centerpiece for the Table—The Dining-room "Handy"—Proper Care of Table Silver—Avoid White Wrapping Paper—How to Make Housework Easier—Kitchen Convenience and Comfort—A Kitchen "Memory Card"—Proper Ways to Wash Dishes—Dish Towels in Abundance—To Clean Tarnished Tin—Woodenware and Cooking Tins—Novel Uses for Salt—A Small Home-made Filter—Bedding for Winter and Summer—What to Do with Worn-out Blankets—An Easy Way to Clean Blankets—Cleaning Old Feather Beds—Bedbugs Destroyed—To Clean Hair Brushes and Combs	125
---	-----

CHAPTER VIII

ABOUT THE HOUSE

Managing the Family Wardrobe—Dress to Make Work Easier—Oilcloth Aprons for the Kitchen—An Idea for Underwaists—Making Old Hats New—Winter Clothing for Little Girls—Teaching Little Girls to Sew —Some Suggestions about House Plants—Growing Ferns for Table Pieces—To Destroy Weeds in the Lawn—Trailing Vines for the Walls—Helping Flower Seeds to Grow—Shrubs for Screening Founda- tions—Odd Designs for the Lawn—How to Make a Rose Jar—Rose Leaf Suggestions—Variety in Your House Arrangements—Sofa Pil- lows, Some Novel Ideas—Utility Boxes	138
--	-----



ROMEO AND HIS JULIET.

Whether the life is of the court or the kitchen, human nature and love-making are the same. Proposals by letter and at a distance are often necessary, but the surest way to secure the object of your devotion is to do your courting in person.



WINTER AND SPRING.

Except that the locks of one are white and the other black, it would be hard to tell which is Winter and which Spring. The faces and limbs of each dancer seem equally full of life and the spectators will doubtless be impartial in their plaudits. The old dancing master is "doing himself proud".

CONTENTS

9

CHAPTER IX

SOUP, FISH AND MEAT RECIPES

	PAGE
Something about Food Values and Nourishment—Degrees of Heat for Best Cooking—Practical Pointers about the Oven—Keeping Food from Spoiling—How to Measure for Recipes—Meat Soups—Vegetable Soups—Salt Fish—Fresh Fish—Dainty Dishes from Left-over Fish—Oysters and Clams—Chicken—Turkey—Miscellaneous Poultry Recipes—Beef—Mutton—Veal—Pork—Breakfast Dishes—Game—Fish and Meat Sauces	153

CHAPTER X

PICKLES, SALADS, VEGETABLES, ETC.

Curing Meats—Pickles and Catsups—Salads and Salad Dressings—All Kinds of Vegetables—Rice Prepared in Various Ways—Macaroni and Spaghetti—Mushrooms—Breakfast Cereals—Egg Suggestions—Food Value of Eggs Compared with Meat—Egg Recipes—Cheese—Biscuits and Rolls	189
--	-----

CHAPTER XI

BREAD, MUFFINS, CAKE, PUDDINGS AND DESSERTS

Bread Suggestions—Muffins—Dumplings for Roasts and Soups—Cakes—Ginger Bread—Pancakes—Pies—Puddings, Desserts and Sauces—How to Prepare Fruit—Fruit Trifles—Creams, Custards and Puffs—Fruit Flavors—Preserving and Canning—Keeping Canned Fruit—Candies and Sweetmeats—Beverages—Cider, Etc.	236
--	-----

CHAPTER XII

WOMAN'S TOILET

How to Perfect and Maintain Beauty in All Its Forms—Including Instructions and Recipes on the Care of the Complexion—Removal of Freckles, Blemishes, Etc.—How to Treat the Hair, Eyes, Teeth, Hands and Feet—Also How to Develop or Reduce the Form, with General Instructions for the Maintenance of Health and Beauty . . .	298
---	-----

CHAPTER XIII

THE FARM

Hygienic Points—Keeping Accounts—Fencing and Care of Machinery—Wood, Water and Ice—Pumping and Irrigation—How to Fertilize the Farm—Electricity as a Stimulant—Rotation of Crops—The Grass Crop—Hay Making and Measuring—Corn—Building Silos—Smutty Grain—Bird and Insect Pests, Etc.	318
---	-----

CONTENTS

CHAPTER XIV

THE GARDEN

PAGE

Proper Drainage, Fertilizing and Watering—Selecting and Testing the Seeds—Garden Tools—The Hand Hoe—The Vegetable Garden—When and How to Plant Different Vegetables—Weeds and How to Get Rid of Them—Harvesting Vegetables—Potatoes, Cabbages, Cauliflower, Tomatoes, Onions, Rhubarb, Asparagus, Horseradish, Celery, Pumpkins, Turnips, Oyster Plant, Mushrooms and Other Vegetables: How to Raise Them and Properly Care for Them—Berries, Grapes and Melons—Shrubs and Flowers—Ginseng and Peanuts—Insect Pests and Insecticides 365

CHAPTER XV

THE ORCHARD

Plowing and Fertilizing—Transplanting—Forcing the Blossoms and Fruit—Girdling and Pruning—The Apple Orchard and Its Care—Grafting the Old Trees—Picking, Packing and Storing the Fruit—The Peach Orchard and How to Cultivate It—Plums, Pears and Cherries—Save the Birds—Enemies of the Orchard and How to Exterminate Them—Black Ants, Borers, Peach-leaf Curl, Black-knot Fungus, Curculio, Codlin Moth, Tent Caterpillar, Rabbits and Ground Mice 419

CHAPTER XVI

CHICKENS AND EGGS

Waste Products of the Dairy, Garden and Orchard as Poultry Food—Sunshine and Shade—Food, Water and Exercise—Choice of Breeds—Laying Hens and Eggs—Their Proper Care—Winter Poultry House and Food—Care and Preservation of Eggs—Breeding Poultry—Mother Hen, Incubator and Brooder—Chicks and Their Care—Meat and Feathers—Diseases and Pests of Chickens—Their Treatment and Eradication 442

CHAPTER XVII

TURKEYS, DUCKS, GEESE AND PIGEONS

The Feather Business—Turkeys and How to Raise Them—Ducks the Hardest of Poultry—Profit in Growing Them—Selection and Care of Breeding Birds—The Value of Geese—Squabs as "Quail on Toast" . 470

CHAPTER XVIII

HORSES

Proper Horses for the Farm—Hints on Food, Feeding and General Care—Water and Watering—Keep the Horse Warm—The Horse Blanket—

CONTENTS

II

PAGE

Care of Hair and Hoofs—Abuse of the Currycomb—The Brood Mare and Colt—Period of Gestation—The Colt's First Year—The Fall Foal—Educating the Colt—Doctoring the Horse for Worms, Lum-
bago, Elephant Leg, Warts, Bots, Blind Staggers, Mange, Founder,
Heaves, Etc., Etc.—How to Drive Away Flies—Mules and How to
Fatten Them 477

CHAPTER XIX

CATTLE

Beef Cattle and Dehorning Them—The Dehorning of Calves and Old
Cattle—The Dairy Cow's Food—The Best Milk Yields—Don't
Excite Your Milch Cow—To Dry Up a Cow—Training the Jersey Bull
—Oats for Calving Cows—What, When and How to Feed the Calf—
Teaching the Calf to Drink Milk—Cattle Diseases—Dry Scab, Clover
Bloat and Eye Disease—Vaccination as a Preventive of Blackleg—
Milk Fever, Garget and Scours—To Keep Flies Off the Dairy Herd . 489

CHAPTER XX

THE DAIRY

Milking the Dairy Cow—Cleansing of the Pails—Straining the Milk—The
Dairy House—Butter Making and Its Secrets—The Cellar—Keeping
the Milk Cool—Don't Overwork Your Butter—Packing Butter for
Winter Use—Uses of Skim Milk—Cheese Making—Home-made
Cheese—Factory Cheese Making—Commercial Side of Dairying . . 505

CHAPTER XXI

HOGS

Common Sense Treatment of Swine—Not a Filthy Animal—Cleanliness,
Dryness, Sunshine, Pure Water, Healthful and Varied Food Necessary
for Proper Raising—Portable Swine House—The Sow and Her Litter
—Treatment Before and After Farrowing—Pig-eating Sows—Feed and
Feeding of Swine—Green Feed—Warm Food in Winter—Curing Pork
—Swine Diseases—Hog Cholera, Mange, Lice and Scours 516

CHAPTER XXII

SHEEP AND GOATS

Proper Country, the First Consideration—Sheep as Weed Exterminators
and Fertilizers—Feed—Time for Mating—Controlling Sex—Ewe and
Lamb; and Best Care of Them—Mutton and Wool Sheep—Shropshires
as Mutton Producers—Wool and Hoofs—Sheep Diseases and Dips—
Foot Rot and Worms—How to Mend Broken Bones—A Word for the
Goats 529

CONTENTS

CHAPTER XXIII

HOUSEHOLD PETS

PAGE

Birds—Their Chief Dangers: Improper Food, or Feeding, and Exposure to Sudden Draughts—How to Treat Them for Colds, Loss of Voice, Diarrhea and Costiveness—Moulting, Care of Feet, Etc.—Obstruction of Oil Gland—Canary Birds—Mating and Care of the Young—Mocking Birds and Parrots—Bird Foods for All—Red Bird and Robin—Dogs and Cats—How to Banish Fleas—The Administering of Medicines—Treatment of a Mad Dog Bite—Rabbits, Mice, Rats, Etc.—Gold and Silver Fish 544

CHAPTER XXIV

BEES, HONEY AND WAX

Italian Bees the Best Honey Makers—Advantages of Bee Farming—The Old Way and the New—Handling of Bees—Transferring and Doubling Up—Water and Food—Wintering of Bees—Laying Up Their Winter Stores—Proper Way of Feeding—Spring Dwindling—The Queen Bee and Her Brood—Foul Brood and How to Treat It—The Honey and Wax—Comb and Extracted Honey—Clarifying Honey—Adulterations and How to Detect Them—Beeswax—How to Prepare It 554

CHAPTER XXV

PHYSICAL AND SOCIAL TRAINING

Physical Culture for Man, Woman and Child—Exercises to Develop Special Muscles—Social Forms and Etiquette—Street Etiquette for Women—Visiting Etiquette and the Use of Calling Cards—Home Etiquette and Table Manners—Society Etiquette and Accepted Forms and Rules for the Wedding, the Christening and the Funeral—Conversation and Social Correspondence 569

CHAPTER XXVI

ART OF RECEIVING AND ENTERTAINING

What Is Expected of the Hostess—Rules and Forms as to Invitations and Introductions—Suggestions about Cards and Music—Novel Forms of Entertainment—Dinners, Suppers, Etc.—Outdoor Amusements—Hints to the Hostess Regarding These and Many Other Matters . . . 599

CHAPTER XXVII

BUSINESS TRAINING

The Advantage of Business Methods to Everyone—Simple but Approved Ways of Keeping Books—Entry Book, Day Book, or Book of Original Entry—The Cash Book—Common Business Terms with Abbreviations—Journal and Ledger—Personal and Merchandise, and Profit and Loss Accounts—Trial Balances, Closing the Ledger, Etc. 611

LIST OF ILLUSTRATIONS

	PAGE
The Sleeping Cupid	<i>Frontispiece</i>
Romeo and His Juliet	8
Winter and Spring	9
Class in Domestic Economy, Ohio State University	16
Too Severe for Home Treatment.	17
Wonders of the Human Framework	32
Sympathetic Systems of the Human Body.	33
Circulatory System and Vital Organs	64
Injuries to Blood Vessels and Bones	65
Simple Bandages for the Injured	80
A Way to Carry the Unconscious	81
Home Economics, Minnesota School of Agriculture	112
A Kindergarten School Class	113
Domestic Economy in the Kitchen	128
"It's Fun to Help Mother."	129
The Listening Joan of Arc	176
A Martyr's Daughter	177
A Typical New Zealand Apiary	192
Feeding the Poultry	192
Plenty of Air and Sunshine	193
A Social Breathing Spell	240
The Cowboys and Their Command	241
Pigeon and Squab Raising.	256
Butter Making—The Old Way	257
Butter Making—The New Way.	257
The Bride's Toilet.	304
Glory of the Coming Woman	305

	PAGE
Plowing Match near Fort Wayne, Indiana.	320
Corn-plant Above and Below Ground	321
Root Development of Mature Corn-plant	321
A Field of Pumpkins Grown for Seed	352
Shelling Corn in Mexico	352
All from a Kernel of Wheat	353
Onion Culture in Colorado	368
Potato Field near Greeley, Colorado.	369
The King of Fruits in State	432
Unique Effect in Shrubbery Trimming	433
Foundered Foot.	448
Skeleton of the Cow	449
Skeleton of Horse	480
Ringbone and Navicular Disease	481
The Nervous System	496
Superficial Layer of Muscles	497
Position of the Left Lung	512
Interior of Chest, Showing Position of Heart and Diaphragm . .	513
Washing Sheep (Chicago Stock Yards)	528
Shearing by Machinery.	529
Anatomy of Foot	544
Anatomy of Foot	545
Quarter-crack and Remedies	560
Sprains of the Loins	561

INTRODUCTION

The wonderful growth of human knowledge, especially within the past century, is perhaps due more to the division of labor, or the labors of the specialist, than to any other cause. Since the world is composed largely of inquiring, learning, practical people, the literary specialists have, to a great extent, devoted themselves to supplying the kind of information demanded by the masses. The consequence is that, year by year, the book market is flooded with literature, issued both in periodicals and volumes, dealing with household topics, personal hygiene and adornment, and problems of garden and farm. The mass has become so tremendous, in fact, that many are rather oppressed and confused than enlightened by it. Having neither time, inclination, nor perhaps ability, to digest the load, they often become disgusted and end by following their own decrees.

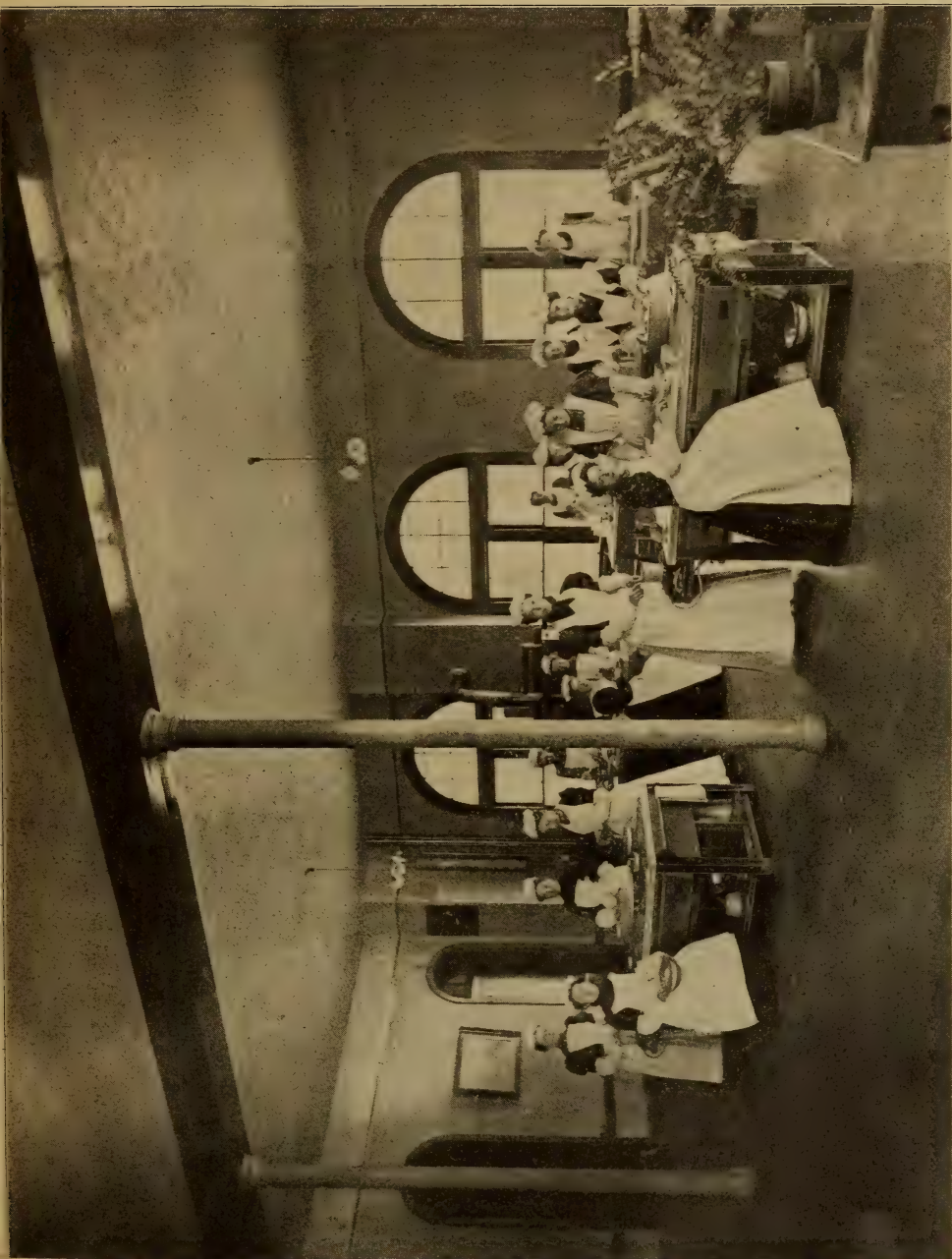
Realizing this unfortunate state of affairs the projectors of this publication entered upon the task of making available to the people this valuable, but bulky mass of information. Taking advantage of the labors of hundreds of specialists, the most practical information was collected, sifted and collated, it being the aim, whenever feasible, to cover three divisions of the subject in the treatment of every topic. For example, the farmer and gardener would naturally wish to know: first, what to plant; second, when to plant, and thirdly, how to plant—whether they were dealing with corn or strawberries. If they wished to be posted as to the destruction of harmful insects, their mental inquiries would take the same direction and most naturally in the order given. Generally speaking, therefore, information under every topic treated has been incorporated under the three heads mentioned.

Although, primarily, the book is a compend of simple recipes—applicable to the household, the farm, the garden, the orchard and the dairy, as well as to man and beast—it contains most valuable general information, usually presented in the form of an introduction to the topic to be treated. As an instance of this latter feature of the work may be mentioned such articles as: The Human Body and Its Construction, Proper Food and Its Importance, Clothing and Its Relation to Health, Sleep and Its Value, How to Prevent Contagion, How to Keep the Baby Well, Value of System in Housekeeping, Common Sense in the Kitchen, Food Values and Nourishment, Personal Hygiene, Physical Culture and Exercise, Gestation in Domestic Animals, Care of Ewes in Lambing Time, Successful Poultry Raising, Determining the Sex of Eggs, Farm Bookkeeping, etc., etc.

In order to obtain the greatest possible good out of the book the editor wishes to impress one point upon the mind of the reader; that is, the necessity for the continuous and careful use of the Index. This has been prepared with great care and is the means which should always be first employed to gather all the information contained in the work upon any topic or topics. At least until it has been conscientiously consulted, do not say that the book does not contain what you seek. If you do not find the information under one heading think of some other way in which it might reasonably be classified and look for it under another word. For example, suppose you were looking for "Rice Croquettes," and failed to find them under that head, turn then to "Croquettes, Rice." This is an example of what is known as "cross-indexing," and is done to meet such cases as the above supposititious one.

With this final warning, "DON'T NEGLECT YOUR INDEX," the work is presented for inspection, use and enjoyment.

THE EDITOR.



Courtesy of Breder's Gazette

CLASS IN DOMESTIC ECONOMY, OHIO STATE UNIVERSITY.

The cry that highly educated women do not make good wives and housekeepers is growing weaker, day by day. Nothing is doing more to offset this charge than the practical training in domestic economy, which both the female colleges and the state universities are providing for women. The picture above shows the cooking class of the Ohio State University.



TOO SEVERE FOR HOME TREATMENT.

Aid to the injured may often be given as well at home as at a public hospital. In severe cases, however, life or death may often be determined by the indecision of a few minutes. When such occasions arise get your patient to the hospital at once, where, if he requires surgical treatment, as above, he will be placed under the influence of anesthetics and find trained physicians and nurses ready to give him the best of chances for recovery.

CHAPTER I

THE MOST IMPORTANT THING IN THE WORLD

**Health and Its Universal Interest—Foundation Principles Are Simple—
Duty of All to Guard Their Physical Welfare—The Human Body and
Its Construction—Proper Food and Its Importance—Clothing and Its
Relation to Health—The Bath and Its Importance—Sleep and Its Value
—Ventilation of Bedrooms.**

If the question were generally asked, "What is the most important factor in the happiness of mankind?" spiritual matters not to be considered in the query, it is safe to say that a tremendous majority of all the intelligent people of the world would reply, "Health."

Indeed, almost all the other conditions of real importance in life depend more or less on health, and with health as a possession almost all misfortunes can be overcome or borne with patience. Wealth, for instance, is of very little consequence in comparison with health. Without the latter there can be little real enjoyment of the former. Without wealth, however, health can assure true happiness, and it is, indeed, one of the most serviceable factors in enabling one to add wealth to his possessions.

With these facts clearly recognized as they are, it is not strange that intelligent men and women more and more give their attention to the welfare of their bodies. In the most highly civilized countries the advance of scientific surgery and discoveries in medicine are hailed with the greatest applause. In such countries the subjects of sanitation and hygiene are given the closest attention, not only by students and scientists, but by every thoughtful individual. It is being recognized

that there is no great and impressive mystery about our physical natures by virtue of which we escape responsibility for guarding our own health in every reasonable way. The thing to do is to keep well if we possibly can, and when we fail, give the best attention possible to repairing the damage.

The one who should neglect the well-known principles of hygiene, because of faith that a good doctor could cure any resulting sickness, would be no less than a fool. The one who gets wet on a stormy day, fails to change his clothes, neglects the cold which follows, contracts pneumonia and dies, is not "removed by an all-wise Providence," as so many resolutions of sympathy declare, but by his own folly. It is unjust to blame a wise and beneficent Power for such results. The household that suffers from typhoid, when drinking well-water drained from its own cesspool, needs sympathy, indeed, not only for the sickness but for the stupidity that placed the well and the infection side by side.

Thus it is that, in arranging the order of subjects in this book of practical information for everyone, it was readily decided to let this most important of all things lead the way. Household recipes and suggestions appeal specially to women; stock, farm and orchard come within the province of men; but health, hygiene and the kindred subjects command attention with equal force, from man, woman and child.

Anyone who adopts the policy of "getting all the money he can, and keeping all he can get," is certain to make himself obnoxious to all about him, and in the end to become very miserable as an embittered, soured and friendless man, a failure in life, however wealthy he may become. But the one who chooses the policy of getting all the health he can and keeping all he gets, will have a very different tale to tell. Regular habits, careful living, sunny disposition, a clear head, a bright eye, a sound mind and a sound body give one a cheerful outlook on the world, enable one to use all his energies to the best advantage, guarantee that he will have real friends, assure happiness, and make of one a genuine success in life, whether with or without the prosperity that is very likely to accompany such qualities.

And what does it involve, this intelligent effort to acquire and retain good health in these bodies of ours?

We have here at our disposal a marvelous and complicated

machine, perfect in design, and imperfect only through some inherited fault or weakness of our ancestors. Most of its processes are automatic, though some are deliberate, or voluntary. The automatic processes themselves may fail to operate, however, through some carelessness of our own in details that we must attend to of our own will. When the voluntary processes are continued with great regularity, they become so habitual that they may be considered almost automatic themselves, and in this state of affairs the whole machine is operating to the best advantage, and will receive no injury except from some outside cause.

This wonderful machine must breathe—an involuntary or automatic action—but it must have pure and wholesome air, day and night, which is to be made sure only by our own care and voluntary action. It must be well nourished by proper food, obtained, selected and prepared by our own voluntary effort, but the food then is assimilated into our strength and support by the automatic and involuntary processes of digestion. So it is through a long list of details which might be named, that the machine of our body is kept in running order—in health, as we say—by a combination of voluntary and involuntary processes, the latter depending on the former in high degree for their success. All of these details are simple enough in themselves when studied a little.

In normal and wholesome surroundings, such as, fortunately, most people in this country enjoy, it is an easy matter to avert disease by proper care, and to bring the system into such condition that in the event of sickness the ailment can be thrown off readily by proper attention. Carelessness of habits not only makes the individual more liable to the outbreak of disease, but weakens the power to combat the disease after it has once gained a hold.

This work is not primarily a medical book in the general use of that term. That is to say, it does not go into the scientific and technical details of physiology, nor yet the description and treatment of every disease, simple or otherwise. Until all persons are educated in disease and medicine, the very best advice that can be given in the event of serious illness is—Call a competent, progressive, educated physician as promptly as possible, and yield absolute obedience to his instructions and treatment. But these instructions will include details of nursing and diet, general care of the health, and other things

which are of great importance in assisting the work of the doctor. He will welcome the evidence of knowledge of such things which can be gained from this practical book. Furthermore, for an intelligent understanding of the human body, how to keep it in health, and how to treat its simple ailments, and the emergencies of all sorts that demand quick attention, this department of the present work is confidently offered to the reader.

THE HUMAN BODY AND ITS CONSTRUCTION

Let us now look briefly at the construction of the human body and the duties which its various parts are intended to perform, after which we will take note of the methods of preserving health in general, and the diseases and injuries which must be guarded against.

First, some explanations of the terms used in these connections: We divide all nature into three classes of objects, those belonging to the Animal, Vegetable and Mineral Kingdoms, and all things belong in one or another of these. They are also divided into organic and inorganic bodies. The first are those having organs by which they grow, such as animals and plants. Inorganic bodies are those which are without life of their own, such as air, water, stone and the like. All inorganic bodies are included in the mineral kingdom. Those organic bodies which have no power to feel are included in the vegetable kingdom, and those which have the power to feel form the animal kingdom. There are things in nature which are so close to this dividing line that even scientists disagree as to whether they belong to the vegetable or animal kingdom.

The parts of an organized body, such as the mouth or the foot of an animal, the root or the leaf of a plant, are called the organs, and the work which an organ is intended to perform is called its function. The material out of which any organ is composed is called tissue, and in the human body, for instance, at least six different kinds of tissue are found, forming the various organs. We will speak of the various solids and fluids of the body by name, only in connection with their ailments and their care hereafter. The tissues themselves are composed of fifteen of the sixty-five chemical elements, or simple substances, known to exist in nature.

The various organs of similar structure and common purpose found in the human body, when taken together, are called a system.

These are the Osseous System, the Muscular System, the Digestive System, the Circulatory System, the Respiratory System and the Nervous System. The Osseous System means the skeleton, which gives shape to the body and supports it, enables us to move and extend our limbs, and protects the delicate organs from injury. The Muscular System is the flesh of the body, forming a pad or covering around the bones, and thus also serving as a protection, in addition to producing at will the motions of our limbs and the controllable organs. The Digestive System is composed of those organs which receive, transmit and dispose of our food, separating the waste matter from the useful, and giving the latter to our nourishment and strength. The mouth, the stomach, the intestines, and various other organs are included in this service.

The Circulatory System includes the heart, the arteries, the veins and the capillaries, those organs which transmit and purify the blood, building up all other organs by this essential fluid which is life. The Respiratory System is that which transmits the air and makes use of it in the body for purifying the blood, thus including the lungs, and the passages and valves which lead thither. The Nervous System is that part of the organism by which the different parts of the body are controlled and caused to work together, and through which mind and body are connected. The brain, the spinal cord, the nerves and the ganglia of the nerves are the organs of the Nervous System. They have been compared most appropriately to an intricate telegraph system, of which the brain is the head office or directing intelligence, the spinal cord is the main line, the nerves are the wires running to every station, and the ganglia are the stations themselves.

In addition to these general systems which have been named we must take note also of the skin, which covers the whole exterior of the body; the mucous membrane, which covers the open cavities and lines the organs; the urinary organs, which separate and discharge the liquid waste of the body and thus are akin to the digestive system; and the organs of generation and reproduction by which the race is perpetuated.

PROPER FOOD AND ITS IMPORTANCE

To keep all of these various tissues and organs in health, as has been suggested heretofore, we must be properly nourished by the

most suitable food. It is of prime importance, therefore, to know the true value of foods in order that we may select wisely. To a higher degree than is commonly realized, our physical welfare depends on this matter. We are not speaking here of food for the sick, but of food for the well, not of special delicacies, but of the every-day food of the average household the practical subject for the practical man, woman or child. Let us see what we may learn from the researches of the wisest students who have considered the subject. It is not necessary here to go into the chemical analysis which has proved the following facts, for facts they are. They may be accepted absolutely as safe guides, with the assurance that only benefit can result.

The popular division of foods into animal and vegetable is neither scientific nor satisfactory. Not that it is a matter of indifference whether man lives on a purely animal or purely vegetable diet or on one derived from both kingdoms, but the differences depend not on the source whence the foods are obtained, but on the proportions in which the various food elements are combined, and on the digestibility and other special properties of the foods selected. The materials supplied in the form of food, and digested and absorbed by the body, are partly employed for building up growing organs and making good the wear and tear—the loss of substances—which they are constantly undergoing, and partly as fuel for the production of heat and of energy.

Speaking roughly, raw meat of ordinary quality consists of water seventy-five per cent, albumen and nitrogenous matters twenty per cent, and fat five per cent. Although meat becomes more tender by keeping, it is more wholesome while fresh, and freshness should not be sacrificed for a tenderness really due to the beginning of decomposition. The flesh of mature cattle, that is, four or five years old, is more nutritious than that of younger ones. It is a matter of experience that beef and mutton are more easily digested than veal and pork. Veal broth, however, contains more nutritious matter than mutton broth or beef tea. Poultry and wild birds, if young, yield a tender and digestible meat. Fish vary much in their digestibility, salmon, for instance, being utterly unfit for weak stomachs. Crabs and lobsters are notoriously indigestible.

Milk is the sole nourishment provided by nature for the young of man and beast, and contains all food stuffs in the best proportions

for the infant's needs. But milk alone is not adapted to the adult. Supplemented by other food, however, it is invaluable and not appreciated as it ought to be. Cheese is highly nutritious, but not very digestible. Eggs resemble milk in composition, except that they contain less water. The nearer raw the more digestible they are, and the yolk is more so than the white, which, when hard boiled, is the most indigestible form of albumen known. The addition of eggs to baked puddings is of questionable utility, and next to a raw egg, well beaten, in milk or water or in soup or beef tea, not too hot, a light boiled custard is the best form for invalids.

From the earliest ages the grains or cereals have formed a portion of man's diet. Wheat has always been the most esteemed, and some varieties of it may be grown in every climate except the very hottest and coldest. Barley, rye and oats may be grown much farther north, but are less digestible. Oatmeal cannot be made into bread, rye bread is rapidly being displaced by wheat, and barley has almost entirely fallen into disuse, except for the purposes of the brewer and distiller. In the tropics rice is the chief cereal. It consists almost entirely of starch, and is thus unfit for bread making. Our own corn, which we inherit from the Indians and have immensely improved, is of all the cereals the nearest approach to a perfect food.

Among roots the potato holds the most prominent place. Potatoes are wholesome only when the starch granules, which compose them, are healthy, as shown by their swelling out during boiling, bursting their covering, and converting themselves into a floury mass, easily broken up. They contain from twenty to twenty-five per cent of nutriment, but this is almost entirely starch, and as a food in combination with meat, cheese or other vegetables, they are not equal to rice. Parsnips, beets and carrots are wholesome and nutritious, and should be used much more than they are. Turnips are not so valuable. Cabbages and their kindred have but little food value, although the salts they contain are excellent in the preservation of health. As regards green vegetables in general the importance of having them fresh is not sufficiently realized. When they have been cut some days changes occur just as truly as in animal food, and the freshness should be carefully watched, except with those specially adapted for storing.

Salads are useful in maintaining the health, although many of

them are very indigestible, those of radishes, celery and cucumbers among the list. Fruits are prized chiefly for their taste. Grapes alone, among fresh fruits, contain any large proportion of food stuff. As an aid to digestion, however, they all are properly highly prized. Fruits should be fully ripe, but without any trace of decomposition.

Stimulants and condiments of high seasoning have little food value of their own, but they have value as aids to digestion when used moderately, and in making simpler foods more palatable. Alcoholic liquors, whether mild or strong, hardly need to be considered here. It is to be gravely doubted if such beverages are ever necessary or of value in the diet, and in this place we are not considering them from any other point of view.

It is equally difficult to speak positively and generally in reference to tea and coffee. It is safe to say, however, that many people drink these tempting beverages to excess, with harm resulting to themselves from it. Tea and coffee alike act as excitors of the nerve centers, accelerating and strengthening the heart's action and respiration, causing wakefulness, and increasing the secretion of the kidneys and skin. Tea and coffee are far superior to alcohol in enabling man to resist the depressing influence of fatigue and exposure to cold, and are admirably adapted to the needs of soldiers on the march or men on outdoor night duty. Cocoa, chocolate and their preparations contain some active elements similar to those of tea and coffee, but the proportion of nutritive material is so much greater that they are to be looked on rather as food than drink.

The considerable use of ice and iced drinks is to be avoided. Small quantities are of service in relieving thirst and vomiting, and in cooling the body when exposed to great heat. But since ice causes the mucous membrane of the stomach to become temporarily pale and bloodless, it checks or altogether suspends the flow of the gastric juice. Thus iced drinks at meals interfere seriously with digestion. Observe also that there is no truth in the popular notion that frozen water or ice is always pure. Water is not purified by freezing, and may be even more polluted than it was before.

CLOTHING AND ITS RELATION TO HEALTH

Having considered thus briefly the matter of food and its relation to health, the question of clothing and personal hygiene now rises for

attention. Besides serving for covering and adornment and guarding the body from injury, the use of clothing is to help in preserving the proper animal heat in spite of external changes. In health the normal temperature of the body, ninety-eight to ninety-nine degrees Fahrenheit, is invariable. In order that this temperature shall be maintained with the least strain on the vitality, the clothing should be such that heat is not readily conducted to or from the body.

Cotton and linen keep off the direct rays of the sun and favor the loss of heat from the body, but being bad absorbers of moisture they are apt to interfere with evaporation from the skin, and cause dangerous chills. Linen and cotton are good conductors of heat, especially the former, and do not readily absorb moisture. Silk and wool are bad conductors. Wool has also a remarkable power of so completely absorbing moisture that it feels dry when cotton or linen would be wet and cold. Its value as a non-conductor, retaining internal heat and excluding external heat, is shown by the fact that we wrap ice in blankets to keep it from melting, and cover teapots with woolen "cosies" to keep them from getting cold. These qualities together render it the most perfect material for clothing under all conceivable circumstances.

The young and the old, the rheumatic, all persons liable to colds or weak in lungs, or who have suffered from kidney diseases, those who are exposed to great heat or cold or are engaged in laborious exercises, ought to wear woolen next to the skin and, indeed, everyone would be better for doing so. Rheumatic persons and those liable to cold feet will find it a great luxury to sleep in blankets in winter instead of sheets, and young children who are apt to get uncovered at night should wear flannel night-gowns next the skin in the winter and over cotton ones in the summer.

The color of clothing is a matter of little importance in the shade, but in the sun the best reflectors are coolest, such as white and light grays, while blue and black are the worst, absorbing the most heat. Dark colors also absorb odors more than light colors do. Indeed, for every-day use light-colored garments of whatever material, provided it can be washed, are to be recommended, though dark colors are too often preferred because they do not show the dirt. What woman would like to wear a cotton waist and skirt six months without washing? Yet it would not be half so dirty as the more

absorbent dark woolen dress that she would wear as long without a scruple.

Beds and bedding are likewise elements of importance in the general health, although not always sufficiently considered. Soft, and especially feather, beds are weakening. The harder a bed, consistent with comfort, the better. Good hair mattresses are the most wholesome. Coverings should be light, porous enough to carry off the evaporations from the body, and yet bad conductors of heat. Most blankets are too heavy, and thick cotton counterpanes are heavy without being warm. Flannel night-dresses are much preferred to cotton at all times, both for comfort and for health. Warmer in winter, they obviate the chill of the cold sheets; while in summer they prevent the more dangerous chill when in the early morning hours the external temperature falls, when the production of internal heat in the body is at its lowest ebb and the skin perhaps bathed in perspiration—a chill which otherwise can be avoided only by an unnecessary amount of bed clothes.

THE BATH AND ITS IMPORTANCE

The dirt of the skin and underclothing consists of the sweat and greasy matters exuded from the pores, together with the cast-off surface of the skin itself, which is continually scaling away. The importance of frequent bathing will be better appreciated when we remember what are the functions of the skin, and the amount of solid and fluid matter excreted thereby. The quantity varies greatly according to the temperature and moisture of the air, the work done, and the fluids drunk, but is probably never less than five pounds or half a gallon daily, and with hard labor and a high temperature this amount may be multiplied many times. From one to two per cent of this consists of fatty salts, without taking into account the skin scales.

A good cistern, spring or well of wholesome water is a positive necessity on every farm. A bath-tub and its frequent use are quite as essential to the welfare of the farmer.

In the cities, where soot and dense coal smoke soil linen and mulch the lungs and air passages, there is necessarily a greater regard for cleanliness on the part of the inhabitants than may be observed in the country, where the agencies which oppose cleanliness are of an entirely different composition and productive of different results.

The farmer during the summer season is lightly clad—a straw or hickory hat, a strong shirt, a pair of overalls, socks and heavy shoes constituting his bodily protection. The absence of underwear—sometimes socks—is excused upon the ground that the lighter the harness the less energy is diverted from the performance of work.

Clothed as he is, the farmer, when working in the fields or engaged in any farm work, soon not only gets his clothing soiled, but the pores of his skin fill with particles of dust and this retards their normal and vitally necessary functions. No vocation in life makes frequent bathing unnecessary. Farmers and miners, perhaps more than any other class of laborers, who are continually in contact with the earth, need the elevating influence, physical and spiritual, of a daily bath.

From a moral and hygienic standpoint the matter of cleanliness, which is next to godliness, is of great importance, and it is fine evidence of intellectual progress and spiritual growth when men use more water and soap at the end of the day's work.

For purposes of cleanliness a bath without soap and friction is perfectly useless, and warm water is more effectual than cold. The shock of a cold plunge or sponge bath, however, has a powerful invigorating influence on the nervous system, and helps it guard against the risks of catching cold. The purpose of health and cleanliness alike will be best served by the daily bath with cold water and once a week with warm.

Speaking of cold baths, we may take note of a popular error as to what this means. The temperature of the body is always a little under one hundred degrees F. If, then, in summer, a bath at sixty degrees F., or forty degrees below that of the body, is considered cold and gives the desired amount of shock, it will do the same in winter, and to insist on plunging into water still colder than that is, to say the least, unreasonable. The cold bath, then, is one at forty degrees below the temperature of the blood, and is the same in January as in July. To bathe in water from which the ice is broken, as some do, is a result of misunderstanding or folly, and may be followed by dangerous consequences.

It is dangerous to bathe after a full meal, and also when fasting. An hour or two after breakfast is a good time, but if one wishes to bathe earlier, a bit of food should be taken first. Again it is dangerous to bathe when exhausted by fatigue, but the glow of moderate exer-

cise is a decided advantage. A light refreshment and a short run or brisk walk are the best preparations for a swim, which should not be prolonged until fatigue and chill are felt, and should be followed by a rub-down, speedy dressing and a quick walk home.

When the resisting and rallying power and the circulation generally are weak, as shown by shivering, coldness of the extremities, and sense of exhaustion, river or sea bathing should be given up. So, too, persons whose lungs and hearts are weak, and above all those who have any actual diseases of those organs, should not attempt it. There is a general tendency among those who enjoy outdoor bathing to stay in the water too long. Boys in summer remain for hours at lake or river side, most of the time in the water. This is an exceedingly weakening practice. Half an hour is ample for all the benefit that can be derived from such a swim, and a longer time in the water is apt to be distinctly injurious.

HOT WEATHER BATH SUGGESTION

A good health preservative, especially in summer and in warm climates, is to sponge the body with water which contains a small amount of ammonia or other alkali. The ammonia combines with the oil or grease thrown out by the perspiration, forming a soap which is easily removed from the skin with warm water, leaving the pores open and thus promoting health and comfort.

SLEEP AND ITS VALUE

No general rule can be laid down as to the number of hours which should be passed in sleep, since the need of sleep varies with age, temperament, and the way in which the waking hours have been employed. The infant slumbers away the greater part of its time. Young children should sleep from six to seven in the evening, until morning, and for the first three or four years of their life should also rest in the middle of the day. Up to their fourteenth or fifteenth year the hour of retiring should not be later than nine o'clock, while adults require from seven to nine hours. Some can do with two or three hours less than this, but they are so few that they offer no examples for us to follow.

Insufficient sleep is one of the crying evils of the day. The want of proper rest of the nervous system produces a lamentable condition, a deterioration in both body and mind. This sleepless habit is begun even in childhood, when the boy or girl goes to school at six or seven years of age. Sleep is persistently put off up to manhood and womanhood.

Persons who are not engaged in any severe work, whether bodily or mental, require less sleep than those who are working hard. Muscular fatigue of itself induces sleep, and the man who labors thus awakes refreshed. But brain work too often causes wakefulness, although sleep is even more necessary for the repair of brain than of muscular tissue. In such cases the attention should be forcibly withdrawn from study for some time before retiring to rest, and turned to some light reading, conversation or rest before going to bed. A short brisk walk out of doors just before bed time may aid the student in inducing sleep. Drugs should be avoided.

After a heavy supper, either sleep or digestion must suffer, but the person who goes to bed hungry will not have sound and refreshing sleep. If one works after supper, through a long evening, he should eat a light lunch of some sort an hour or two before bed time.

Ordinarily persons do best to retire at ten or eleven, and the habits of society which require later hours are to be regretted. Brain work, however, after midnight is most exhausting, and though sometimes brilliant, would probably be better still if diverted to earlier hours. Whatever be the explanation, it is an undoubted fact that day and night cannot be properly exchanged. About one or two o'clock in the morning the heart's action sinks, and nature points to the necessity for rest. Sleep in the day time does not compensate for the loss of that at proper time, and slumbers prolonged to a late hour do not refresh the mind or body as does sleep between the hours of eleven and six or seven, the normal period for rest.

Old persons require, as a rule, less sleep than those of middle age, just as they require less food, because their nutritive processes are less active than when they were younger, and perhaps because their mental efforts also are less forced and attended by less exertion and more deliberation. Women, generally speaking, require more sleep than men, at least under like circumstances, apparently because in their case the same efforts involve greater fatigue.

VENTILATION OF BEDROOMS

Rooms which are to be slept in after having been occupied during a whole evening must be thoroughly ventilated before the occupant prepares for bed. Doors and windows must be thrown open for several minutes, the gas or lamp put out, and the air completely changed, no matter how cold it may be outside. This is the only way to obtain refreshing sleep. On going to bed the usual ventilating arrangements should then be followed, but the great point is to change the air thoroughly first.

REGULARITY OF HABITS

The importance of regularity and punctuality in every circumstance of daily life is not sufficiently realized. The more often and regularly any act is performed the more automatic it tends to become, and the less effort, whether mental or physical, attends its performance. This is a matter of daily experience and observation, and is true not only of mental work and manual or mechanical exercises, but of the organic functions of the body. Quite apart from the harm done by too frequent eating or too prolonged periods between meals or want of rest, the brain finds itself ready for sleep, the stomach for digestion and the bowels for action at the same hour every day, when these acts are performed with unbroken punctuality, and the strain upon the system to adjust itself to new conditions is therefore reduced to a minimum.

CHAPTER II

GENERAL HEALTH CONDITIONS

Guard Your Water Supply—How Diseases Are Classified—How to Prevent Contagion—Care of the Sick Room—Disinfection, Its Importance and Its Methods—Period of Isolation or Quarantine—Duty of All Households Where Sickness Has Invaded, to Guard Others against Its Spread.

Man cannot preserve his health entirely by his own caution as to his food and personal habits. His surroundings enter into the matter at all times. By this is meant the house in which he lives, its situation and conditions, as well as the community itself. Fortunately, in this country we have not yet become so overcrowded as to forbid ordinary care in the matters of drainage, light, ventilation and other requisites. Americans should congratulate themselves that their ample country and general prosperity enable them to regulate their food, their habits and the conditions around them in high degree. At the same time the fact that these things are so generally within our control places upon us the obligation to do what we can for the community to maintain the general health.

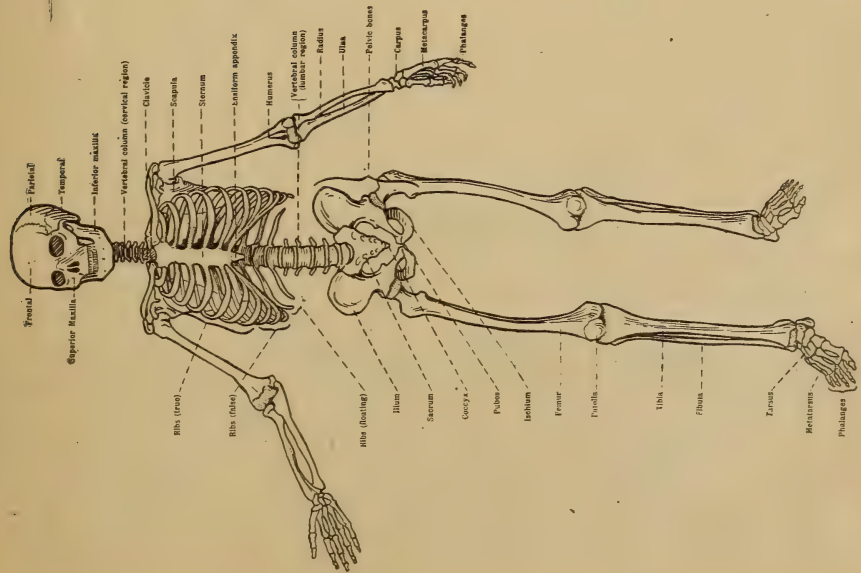
Let us note now, briefly, some points of primary importance in the conditions that assure general health. Air, warmth and light must be provided for the dwelling. In cities we cannot always choose, but in smaller communities and in the country we can in large degree control such things for ourselves. Some things require only to be suggested to be clearly understood. A house should stand where the character of the soil and the contour of the surface will provide the best drainage. Hollows should be avoided. When a house is built on a hillside the ground should not be dug out so that a cliff rises immediately behind. Trees may afford valuable shelter, not only from cold winds, but from fogs. But it is not generally wise to have them close around a dwelling, at least in large numbers, since they impede the free circulation of the surrounding air, and retain dampness beneath their shade. In the country a house may be sheltered from cold winds on the side from which they prevail, by trees.

Exposure of each side of a house in succession to the rays of the sun helps to keep the outer walls dry, to warm it in winter and to aid ventilation in the summer. The north wall may be made with advantage a dead wall, and ventilating pipes and soil pipes may be carried up through it, but chimneys carried up through a north wall, being warmed with difficulty and apt to smoke, should not project but be built inside the house. Attics with slanting ceilings and dormer windows are cold in winter and hot in summer.

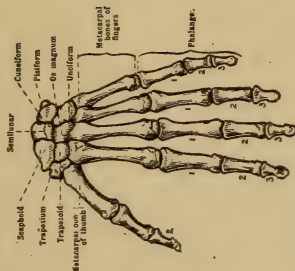
Once occupied, the most important thing in the house is fresh air. The most common impurity in the atmosphere of rooms is carbonic acid gas, which is thrown off by the lungs of the occupants, and must be disposed of by ventilation in order that health shall be assured. The lamps or gas lights used in the room likewise give off carbonic acid, which is formed at the expense of the oxygen of the air, the vital element, which we require to breathe. Crowded rooms, or any rooms improperly ventilated, become tainted in this manner, and the headaches and faintness which we experience under such circumstances are direct and natural results of carbonic acid poisoning. School rooms are particularly trying upon pupils and teachers, unless their ventilation is especially guarded. It is considered that the proper degree of purity in the air of a room can be maintained only by introducing at least 2,500 cubic feet of pure air per hour for each person, this being a virtual minimum. In mines it has been noticed that the men require not less than 6,000 cubic feet per hour, and that when the quantity falls to 4,000 cubic feet there is a serious falling off in the work done. Manifestly the better and tighter the building the more need there is for special means of ventilation.

In the days when open fireplaces were almost the only means of heating houses they were of great value in aiding ventilation. Nowadays our stoves, radiators and furnaces do not help us in this matter, and we must take additional pains to see that ventilation is provided in some other way. Of course the simplest and most perfect method is to permit the free passage of the wind through open doors and windows. Every room should have its air thus completely renewed at least once a day. The mere renewal is done in a few minutes, but a longer time is required to dislodge the organic vapors and other impurities that lurk in the corners and behind furniture. In schools and work shops this should be done during the intervals for

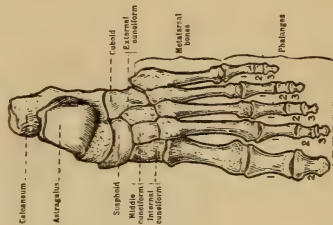
BONES AND JOINTS.



The Skeleton (Front view).



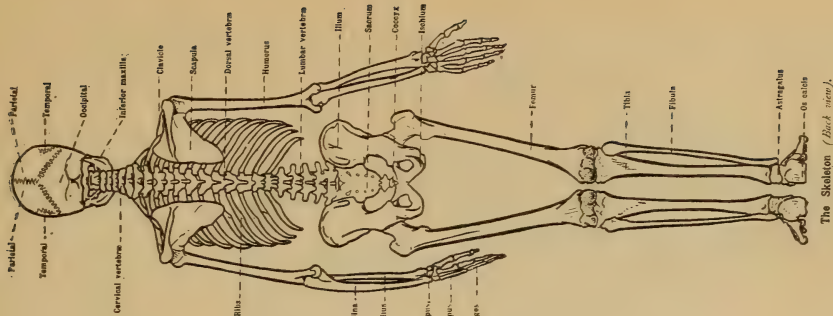
The Bones of the Left Hand (Back view).



The Bones of the Left Foot (Top view).

WONDERS OF THE HUMAN FRAMEWORK.

Although the human framework is weak compared with that of many of the lower animals, it is fearfully and wonderfully made. The skull inclosing the heavy brain is at the central point of equilibrium—the balance weight of the entire structure. The vertebral column is the pole which supports the weight and binds the trunk together. Of the parts outside the trunk proper, none are more worthy of being studied from the point of mechanical perfection than the hands and feet.



The Skeleton (Back view).

meals, and in churches between services. But in our climate it is not possible to have windows and doors open during all the time a room is occupied, except in very warm weather. It is seldom, however, that the window of a bedroom cannot be opened for a few inches all night without direct benefit to the occupant of the room. His bed, of course, must not be immediately in the draught. Curved pipes, ventilating shafts and slides under the windows are substitutes easy to use when windows cannot be actually opened.

GUARD YOUR WATER SUPPLY

Water supplies differ greatly in purity and composition, and are of the utmost importance in their effect upon the general health of a household. There is nothing which requires to be guarded more carefully. Absolutely pure water is almost unknown. Rain water collected in open countries is the purest, though even it takes up matters in its passage through the air, and in towns may be strongly acid. All waters which have been in contact with the soil dissolve out of it numerous inorganic and organic substances. Waters are described as hard or soft, hardness being the popular expression for the property of not easily forming a lather with soap. It is due to the presence of salts of lime and magnesia. Hard waters, if their hardness be not excessive, are agreeable and wholesome for drinking, but not well adapted for laundry or bathing purposes. They tend to harden vegetables cooked in them, and do not make as good tea as soft water. Rain water is, of course, the softest, but as a rule lakes yield waters also quite soft. When a good and wholesome water cannot be obtained from springs or rivers, as in malarial districts, and when there is reasonable ground for thinking the ordinary sources are contaminated by epidemics, it is well to fall back on the rainfall for drinking purposes, with special care that it is collected in a cleanly manner.

Surface wells are always to be viewed with suspicion when they are in the vicinity of stables and cesspools, farm yards, cemeteries and anywhere in the towns. The filtration of the water through the soil removes the suspended matters, so that it may be clear enough to the eye, but it has no power to remove impurities actually dissolved. The eye cannot be trusted to judge the impurities of drinking water. Water which appears absolutely clear may be unwholesome

in the extreme, and water with sediment floating in it may be in no way unwholesome. Nothing but an analysis of the water can settle this with absolute certainty. Deep wells and artesian wells which penetrate the surface strata are likely to be safe. Marsh waters carry malaria and should never be drunk without boiling. Indeed suspicious water of all sorts may be made safe by boiling, although it is not sufficient always merely to bring it to a boil. Thirty minutes above the boiling point is a safe rule to follow. Typhoid, diphtheria, dysentery, cholera, diarrhea and other dangerous diseases are caused by impure water, either by suspended mineral matters acting as irritants, by suspended vegetable and animal matters, or by dissolved animal impurities. Sewer gases dissolved in water, in addition to these diseases, cause sore throats, boils and other ailments.

It must not be forgotten that water closets, stable yards, manure piles, decaying kitchen slops and all sorts of filth are responsible for many of the most serious diseases, either by draining into the well and so contaminating the water supply, or by direct breeding of disease germs carried as dust and inhaled. Health is one of the rewards for household cleanliness of the most careful kind.

HOW DISEASES ARE CLASSIFIED

In one sense most diseases are preventable, if all the circumstances which tend to spread them could be absolutely controlled by a single wise authority, and if all the physiological laws would be obeyed by all persons at all times. But as this happy condition is not in effect, we have to reckon with various kinds of diseases, as well as the accidents and injuries which come to us in health. The various diseases are classified into general groups.

Endemic diseases are those which are constantly present in a community because of certain unfavorable conditions, such as malaria in swampy regions, rheumatism from bad climatic conditions, and diseases resulting from unhealthy employments. Miasmatic diseases are those due to conditions of the soil, and comprise the various forms of intermittent fevers, agues and the like. Infectious diseases, on the other hand, belong to the people, and not to the place. They are communicated from one person to another through the air, or by means of infected articles of clothing, etc., and they attack the strong and healthy, no less than the weak. Among such are smallpox,

scarlet fever, measles, etc. Various branches of infectious diseases are recognized in addition, as combining some of the characteristics of the classes already named. For instance, erysipelas and other blood poisons are generated within the body of the individual who, so to speak, infects himself and may then infect others. Typhoid, cholera and yellow fever are miasmatic diseases, but they are also capable of being carried by human intercourse, infected clothes, polluted water, etc., within certain limits of space and time. Hydrophobia, glanders and such diseases are communicated only by actual contact of body. Rickets and scurvy are preventable, though not communicable diseases, being direct results of mal-nutrition or imperfect nourishment, and consequently are diseases of diet.

Bacteria are those minute organisms which under various names are the active causes not only of diseases but of all putrefaction, fermentation and like changes in dead organic matter. Like all living things they may be killed, and on this is based the whole theory of disinfection. Some are more hardy than others, under conditions which are frequently supposed to be unfavorable to them. Merely to destroy an unpleasant odor or to admit fresh air into a room does not mean to disinfect, and it is necessary to understand this clearly in the effort to purify rooms in the event of infection.

Contagion is communicated sometimes with the utmost ease, if the new victim be in a receptive condition, and in the presence of any disease, even the most simple, it is well to take every precaution. The mucous surfaces are peculiarly ready to absorb infection of many kinds. Measles is easily absorbed from pocket handkerchiefs, as are also scarlet fever, whooping-cough and other diseases. By inhalation through the nostrils or mouth, scarlet fever, measles, whooping-cough, mumps, diphtheria, dysentery, cholera and even pneumonia and meningitis may be communicated. By eating or drinking something which contains the germs of cholera, typhoid, malaria, tuberculosis or consumption, diphtheria and scarlet fever, these diseases are communicated.

HOW TO PREVENT CONTAGION

It is an undoubted fact that not enough attention is paid to isolation in times of sickness. There is too much visiting in the sick room, too many people share the care of the patient, the nurse

mingles too freely with other members of the family, and there is not enough care to keep the soiled bedding, garments and refuse of the sick room absolutely separated from that of the rest of the house. Scarlet fever is a noteworthy instance of a disease which constantly spreads by carelessness. Just as long as the scaling or shedding of the outer skin continues contagion may be carried, for it is these scales which bear it. It is nothing less than criminal, therefore, to permit the patient who is recovering to mix with other persons, except those who have been caring for him already. In the early stages of the disease the infection is chiefly in the breath, and in the secretion of the nostrils. During the disease pocket handkerchiefs should never be used, soft linen or cotton rags being substituted and immediately burned.

Most of the same things are true as to measles, whooping-cough, mumps and German measles, which are constantly spread by sheer carelessness because people do not realize the obligation resting upon them to guard others from contact with disease. These ailments are highly infectious before they are certainly recognized, and for that reason it is not possible always to isolate cases in time, but at least after the fact is clearly understood there should be no further carelessness.

Another prevalent disease in which carelessness is responsible for much of its spreading is tuberculosis, phthisis, or consumption, as it is more familiarly known. It is not possible yet to isolate every person suffering with this insidious disease, nor is that suggested. But at least it may be urged that every such sufferer shall thoughtfully guard in every way in his power against communicating it to his own neighbors and family. The bacilli, or bacteria, of consumption swarm in the spittle of the patient, and are diffused by the wind as dust as soon as they are dried. To guard against infection from this cause, spittoons should be used, which can be absolutely disinfected, or cloths which can be promptly burned.

Smallpox is perhaps the most infectious of diseases. Yet in vaccination we have a means of protection which we have not in any other. As long as a large unvaccinated population exists, however, we shall have epidemics from time to time. Before the introduction of vaccination nearly everyone had smallpox, just as now almost all persons have measles at some time or other. The heaviest mortality

occurred within the first five or ten years of life, the deaths in later periods being very few, since the population had mostly been rendered immune by having had it already.

Measles is a well-defined disease, intensely infectious, occurring but once in a lifetime. It is very rarely fatal, nearly all the deaths credited to it being really due to bronchitis and inflammation of the lungs, the results of neglect and exposure to cold. No age is exempt. The only reason why it is looked on as a disease of childhood is that being in the highest degree infectious from the beginning, when its nature is not suspected, few children in the schools can hope to escape it, but if by chance they do, they are just as susceptible to it in after-life.

Whooping-cough is a highly infectious disease, occurring but once in a lifetime, but at any age, though most frequently in childhood. The frequent belief that children suffering from whooping-cough should be as much as possible in the open air is an entirely mistaken one, as it leads not only to continuing the disease longer, but to danger of bronchitis and pneumonia. As in diphtheria and scarlet fever the mucus is the chief vehicle of contagion, and pocket handkerchiefs should be forbidden, pieces of soft rag being substituted and burned as soon as used.

Typhoid or enteric fever is slow and uncertain in its onset, a full month in duration, and the return of health is usually tedious. It is like diphtheria, directly a result of unsanitary conditions. Danger of direct infection from the patient is slight, but the poison remains in the evacuations from the bowels and is propagated by them. By this means a reservoir or river has been known to infect a whole town. Broken or defective drains, the entrance of sewer gas into houses, wells polluted by cesspool drainage, and milk diluted with infected water, are among the principal means of spreading the disease. It is an absolute rule that all bedding which becomes soiled should be destroyed, and the refuse of the sick room should be instantly disinfected and removed from the dwelling.

CARE OF THE SICK ROOM

Although it is quite possible that few may be able to follow every instruction or precaution advised to guard against the spread of diseases, we may at least outline the conditions to be aimed at and

secured as nearly as possible. In spite of the additional labor that it makes, the ideal place for a sick room in a private house is as far from the ground as possible. To be of any service at all isolation must be real and complete. A room should be selected in the topmost story, the door kept closed, a fire, large or small, according to the weather, kept burning, and the windows open as much as possible. Even in the winter this can be done without danger under most circumstances by lowering the upper sash and breaking the draught by a blind or a screen. The staircase and hall windows should be kept open day and night. The other inmates of the house should keep their own rooms thoroughly ventilated. The persons nursing the patient should on no account mix with other members of the family, or if that cannot be helped they should take off their dresses in the sick room, and after washing their hands and faces, put on other dresses kept hanging outside the room, or in an adjoining apartment.

All dishes used in the room should be washed separately, and not with others in the kitchen. The room itself, except in case of measles and whooping-cough, the poison of which does not retain its vitality for any length of time, should be as scantily furnished as possible, containing nothing which can retain infection. All woolen carpets, curtains and bed hangings should be removed, and only wooden or cane-bottomed chairs kept. There should be no sofa, and iron bedsteads are better than wood. A straw mattress of little value, which may be destroyed afterward, is better than a hair one, which can be disinfected, but feather beds and such coverings should be absolutely forbidden.

In scarlet fever, diphtheria, smallpox and typhoid, all soiled clothing and bedding should be immediately put into an earthenware vessel, containing a solution of corrosive sublimate (one drachm to a gallon of water) and left to soak for some hours before being washed. On being taken from this disinfecting solution they must, even at risk of spoiling flannels, be thrown into boiling water and boiled for some minutes before soaping and washing. No infected clothes should, under any circumstances, be sent out of the house, unless all of these precautions are absolutely guarded.

In cases of typhoid and scarlet fever the vessel which receives the passages from the bowels should have in it a solution of corrosive

sublimate or of carbolic acid. The contents then should be stirred with a poker before being poured into the water closet, and the same disinfectant should be sprinkled liberally into the closet.

After the peeling in scarlet fever or the shedding of scabs in smallpox has set in, the patient should take, at intervals of three or four days, hot baths with soft soap, the hair, previously cut short, being well scrubbed with the same. In scarlet fever and diphtheria the mouth and throat should be frequently sprayed, washed out or gargled with a pretty strong solution of permanganate of potash or a weak one of chlorinated soda.

DISINFECTION, ITS IMPORTANCE AND ITS METHODS

There are few subjects on which greater ignorance exists, not only among the public but among medical men as well, than on that of disinfectants. The word is used vaguely to mean deodorants, which destroy bad odors; antiseptics, which prevent the spread of injury by putrefaction in a wound; and germicides, which actually destroy the bacteria or microbes which produce contagion in a disease. In some cases one of these may serve the function of another, but that is merely incidental. Deodorants may be such simple things as perfumery, tobacco smoke or camphor, and they serve very useful purposes in masking bad smells, but they are entirely useless in preventing disease.

Permanganate of potash, or "Condy's fluid," as the druggists call it, is a powerful antiseptic, instantly destroying the matter that is beginning to putrefy by what is really a burning process. It sweetens the foul discharges from wounds and bad throats, but is nearly powerless to destroy the living germs of disease.

The disinfectants of most practical value, which are at the same time germicides, are carbolic acid, chloride of zinc, sulphurous acid, chlorine and corrosive sublimate. Carbolic acid, when strong enough, is fairly satisfactory. Five per cent solutions (one part in twenty) stop the activity of bacteria, but do not actually destroy their vitality. Solutions twice as strong do, but water will not dissolve so much, and the odor that remains is an objection to their use for disinfecting linen. Chloride of zinc is far more powerful. If too strong a mixture is used it may injure cloth, so that this wants to be guarded against.

Sulphurous acid (the fumes of burning sulphur) is a most convenient disinfectant. Shut the windows down tight, leave all the clothing in its place and open trunks and drawers. Put a thick layer of ashes in an old iron pot, over which place a shovel of live coals; throw a teacup of pulverized sulphur on the coals and run out, closing the doors in your exit. Stay out several hours. On returning open all doors and windows, and the odor will soon be gone, also the bugs, insects and the germs of any disease that may be lodged in the clothing, etc.

The following instructions, published in the *Hospital Gazette*, were prepared by a board of eminent physicians and surgeons for public information, and on the general proposition of disinfection they can hardly be surpassed: Three different preparations are recommended for use to make the purifying of a house, where infection has been, complete. The first is ordinary roll sulphur or brimstone, for fumigation; the second is a copperas solution, made by dissolving sulphate of iron (copperas) in water in the proportion of one and one-half pints to one gallon, for soil, sewers, etc.; the third is a zinc solution, made by dissolving sulphate of zinc and common salt together in water in the proportion of four ounces of the sulphate and two ounces of the salt to one gallon, for clothing, bed linen, etc. Carbolic acid is not included in the list, for the reason that it is very difficult to determine the quality of what is found in the stores, and the purchaser can never be certain of securing it of proper strength. It is expensive when of good quality, and it must be used in comparatively large quantities to be of any use. Besides it is liable, by its strong odor, to give a false sense of security. Nothing is commoner than to see saucers of carbolic acid and other disinfectants in a sick room. Considering the vitality of bacteria, and that they require carbolic solutions of more than five per cent or several hours of intense heat or similar heroic measures to kill them, it must be evident that such feeble vapors as can be tolerated in the sick room are utterly useless. Here are the instructions in full:

In the Sick Room, the most valuable agents are fresh air and cleanliness. The clothing, towels, bed linens, etc., should, on removal from the patient and before they are taken from the room, be placed in a pail or tub of the zinc solution, boiling hot if possible. All discharges should either be received in vessels containing the copperas

solution, or, when this is impracticable, should be immediately covered with the solution. All vessels used about the patient should be cleansed or rinsed with the same. Unnecessary furniture—especially that which is stuffed—carpets and hangings should, when possible, be removed from the room at the outset; otherwise they should remain for subsequent fumigation, as next explained.

Fumigation.—Fumigation with sulphur is the method used for disinfecting the house. For this reason the rooms to be disinfected must be vacated. Heavy clothing, blankets, bedding and other articles which cannot be treated with the zinc solution, should be opened and exposed during fumigation, as next directed. Close the rooms tightly as possible, place the sulphur in iron pans supported upon bricks placed in wash-tubs containing a little water, set it on fire by hot coals or with the aid of a spoonful of alcohol, and allow the room to remain closed twenty-four hours. For a room about ten feet square at least two pounds of sulphur should be used; for larger rooms proportionally increased quantities.

Premises.—Cellars, stables, yards, gutters, privies, cesspools, water closets, drains, sewers, etc., should be frequently and liberally treated with the copperas solution. The copperas solution is easily prepared by hanging a basket containing about sixty pounds of copperas, in a barrel of water. (This would be one and one-half pounds to the gallon, or about that. It should all be dissolved.)

Body and Bed Clothing, Etc.—It is best to burn all articles which have been in contact with persons sick with contagious or infectious diseases. Articles too valuable to be destroyed should be treated as follows: Cotton, linen, flannels, blankets, etc., should be treated with the boiling hot zinc solution, introduced piece by piece; secure thorough wetting, and boil for at least half an hour. Heavy woolen clothing, silks, furs, stuffed bed covers, beds, and other articles which cannot be treated with the zinc solution, should be hung in the room during the fumigation, their surfaces thoroughly exposed, and the pockets turned inside out. Afterward they should be hung in the open air, beaten and shaken. Pillows, beds, stuffed mattresses, upholstered furniture, etc., should be cut open, the contents spread out and thoroughly fumigated. Carpets are best fumigated on the floor, but should afterward be removed to the open air and thoroughly beaten.

Corpses.—Corpses of those dying from infectious diseases should be thoroughly washed with a zinc solution of double strength; should then be wrapped in a sheet wet with zinc solution and buried at once. Metallic, metal-lined, or air-tight coffins should be used when possible, certainly when the body is to be transported for any considerable distance. Of course a public funeral is out of the question.

In addition to these disinfectants of long standing, which have been recognized in medicine for many years, another of great value is now coming into high favor. This is formalin, which, in its various forms, is convenient, economical and highly effective. Under the name of formaldehyde, one preparation of this disinfectant is widely but improperly used as a preservative for milk, meat and some other perishable foods. In almost every instance this is illegal, and properly so, for the substance is a poison and even when diluted cannot fail to be injurious. From formalin various disinfecting substances are made, and may be had at the drug stores, some as liquids and others in tablets to evaporate over a lamp for the general disinfection of rooms or houses. The latter may be recommended in the highest degree as a safe, economical and absolutely sanitary process.

Corrosive sublimate is, perhaps, the most powerful germicide known, a solution of one part in a thousand, or a little more than a drachm to a gallon of water, being amply sufficient for all practical purposes. It does not injure or stain wood, varnish, paint, plaster or ordinary fabrics, and if the ceiling be whitewashed with a genuine lime wash, and the walls, floors, doors and furniture of the room be washed down with the mixture, no microbes can possibly escape. It attacks metals, but iron bedsteads are protected by the enameling.

Poisonous as corrosive sublimate is, the danger from it is easily guarded against. The smallest dose of it known to have proved fatal, even to a child, would require no less than a quarter of a pint of the solution of one in a thousand parts. A mouthful of this would not cause more than temporary discomfort, while the taste would prevent a second being swallowed. Still, as a further safeguard it might be well to add a little laundry bluing to give color to the mixture, and a little wood alcohol to give it a smell. Then with a proper poison label on it surely no one would be endangered by it.

PERIOD OF ISOLATION OR QUARANTINE

A person who has had any infectious disease and has been thoroughly disinfected, with his clothes, may be allowed to mix freely with his fellows, in school, for instance, after the following periods. Scarlet fever: Not less than eight weeks from the appearance of the rash, provided peeling has completely ceased, and there be no sore throat. Six weeks is not enough, as there are cases of direct infection after seven weeks when all symptoms have entirely disappeared. Measles and German measles: In three weeks, provided all peeling and coughing have ceased. Smallpox and chickenpox: A fortnight after the last scab has fallen off; the hair, in case of smallpox, having been cut short and scrubbed with carbolic soap or soft soap. Mumps: Four weeks from the attack if all swelling has disappeared. Whooping-cough: Six weeks from recognition of the whoop if the cough has entirely lost its spasmodic character, or four weeks if all cough whatever has ceased. Diphtheria: In a month if convalescence be complete, there being no trace of sore throat or discharge from the nose, eyes, etc. Ringworm: When the whole scalp, carefully examined in a good light, shows no stumpy broken hairs or scaly patches.

It has been very difficult to impress upon communities and individuals the extreme importance of strict obedience to the foregoing rules. There is an unfortunate tendency in too many instances for households to fail in guarding their neighbors from contact with their own members who are convalescing from diseases. Even such common and simple diseases as whooping-cough, chickenpox, mumps and others that are considered especially to belong to children, frequently prove fatal to those who are susceptible to them, and it is truly wicked to permit by carelessness such an infection to reach a school or elsewhere where weaker children may suffer as a result.

CHAPTER III

COMMON SENSE IN THE SICK ROOM

**Ventilation, Light, Temperature and Furnishings—Care of the Patient—
His Temperature and Pulse—Bed Sores—The Characteristics of Fever
—Simple Household Remedies—What to Put in a Remedy Cupboard—
How to Keep the Baby Well.**

To every living person air must be furnished every moment if life is to be preserved. The vital element of the air is oxygen gas, the life-giving medium, and this is diluted with nitrogen, because the oxygen itself, breathed alone, would be too stimulating for our lungs. In the delicate cells of the lungs the air we have inhaled gives up its oxygen to the blood, thus purifying it, and receives in turn carbonic acid gas and water, foul with waste matter, which the blood has absorbed during its passage through the body and which we now exhale. The blood is red when it leaves the heart, pure. It returns to the heart purple from the impurities it has picked up, and by the oxygen is once more changed to red.

Manifestly if this process is so important to a person in health, it must be doubly so to one who is sick. The impurities of a sick room consist largely of organic matter, including in many instances enormous numbers of the disease germs themselves. If we uncover a scarlet fever patient in the direct rays of the sun a cloud of fine dust may be seen to rise from the body, the dust which carries the contagion itself. In an unventilated place this is but slowly scattered or destroyed, and for many days it retains its poisonous qualities. "The effect of rebreathing the air cannot be overestimated," says Martin W. Curran of Bellevue Hospital, New York City. "We take back into our bodies that which has been just rejected, and the blood thereupon leaves the lungs bearing, not the invigorating oxygen, but gas and waste matter, which, at the best, is disagreeable to the smell, injurious to the health, and may contain the germs of disease."

Fortunately rooms may be ventilated by means of windows in several different ways with little risk of draught. For instance, the lower sash of the window may be raised three or four inches, and a

plain bar of wood an inch in thickness, extending the whole breadth of the window, may be put below the window sash, entirely filling the space. By this means the air current enters above, between the two sashes in an indirect line, and it is gradually diffused through the room without a draught. Here is a simpler way of doing the same thing. Take a heavy piece of paper or cloth, about twelve inches wide, and long enough to reach across the window. Tack it tightly at both ends and the lower edge to the frame, and raise the lower sash of the window a few inches. The air entering will be diverted by the cloth. If the air is very cold it must not be admitted at the bottom of the room, but from the top of the window, and should be directed toward the ceiling so as to fall and mix gradually with the warmer air of the room.

The influence of the sun's rays upon the nervous system is very marked. That room is the healthiest to which the sun has freest access. The sick room should be kept looking bright and cheerful, unless the disease be one that requires the eyes to be specially guarded from the light. The eyes are weaker, however, in all sickness, and the bed should be turned so that the patient does not look directly toward the bright light of the open window.

The proper temperature for a sick room is sixty-eight degrees above zero. In the hot days of summer when this temperature is greatly exceeded, or the air is too dry, hang some thin muslin, soaked in ice water, across the opening in the windows, which will moisten the air, cool the room, and keep out many particles of floating dust. If the floor of the sick room is carpeted and the illness is serious, cover the carpet with sheets and sprinkle on them a weak solution of carbolic acid at intervals. The sheets can be changed as often as necessary. The cleanest wall is one that is painted, which can be washed and disinfected in any way desired. Nurses consider papered walls the worst ones, and plastered the next, but the latter can be made safe by frequent lime washings and occasional scraping.

Have as little furniture as possible in the sick room, and all of this of wood, metal or marble, kept clean by being wiped with a cloth wrung out of hot water. A small, light table should be placed for the patient's use, from which he may reach his own glass of water. The bed should not be placed with one of the sides against the wall, as a nurse should be able to attend to a patient from either side.

CARE OF THE PATIENT

In all cases where the patient is too ill or forbidden to sit up in bed, a feeding cup with a curved spout should be used. The nurse's hand should be passed beneath the pillow, and the head and pillow gently raised together. Where there is extreme prostration a glass tube, bent at a right angle, one end of which is placed in the cup containing the food and the other in the patient's mouth, will enable him to take liquids with scarcely any effort.

If the patient is in a state of delirium, or unconscious, endeavor to arouse him somewhat before giving him his food. Sometimes merely putting the spoon in his mouth is enough, but at other times you will require to get it well back on the tongue. In such cases, watch carefully to see that the liquid is swallowed before attempting to give a second spoonful.

When it comes to the convalescent patient the food is no less important than during the time of illness. Serve it on a tray, covered with a fresh napkin, have the dishes and spoons clean and shining, and be careful not to slop things into the saucers. Take the tray from the room as soon as the meal is ended, for uneaten food sometimes becomes very obnoxious to the sick person if it remains in sight. To provide food for the sick which is both suitable and attractive sometimes requires great care, judgment and patience, but the effort is worth all the trouble it costs. The aim should be to give what will be at the same time easy to digest and of nutritive value after it is digested. In another department of this work will be found many recipes adapted for invalids.

Medicine should be given at regular hours, and careful attention should be paid to the directions as to the time when the doses are to be given, as, for instance, before or after meals. The exact quantity ordered should be given, as even a slight error may defeat the results intended. Never give any medicine without looking at the label, being absolutely certain that you have the right one. Never allow a bottle to stand uncorked, for many mixtures lose their strength when exposed to the air.

TEMPERATURE AND PULSE

We follow Mr. Curran again in his clear statement of the importance of temperature in disease. Every household should have a

clinical thermometer to use in taking the temperature of the patient in the event of sickness. The average normal temperature in adults is from 98.4 to 98.6 degrees. There is a daily variation of sometimes 1.5 degrees, the highest point being reached in the evening. Exercise, diet, climate and sleep cause deviation from the standard. Almost every disease, however, carries with it an abnormal variation in temperature. If the rising temperature does not always show what the disease is, it does show what it probably is not. For instance, a rapid rise of three or four degrees above the healthy standard does not mean typhoid fever, but may mean measles or scarlet fever, and in whooping-cough and smallpox, the highest temperature precedes those diseases from two to four days. In diphtheria there is this rise before anyone thinks of looking at the throat. Increase of temperature calls for cooling remedies, external and internal, and degrees of temperature below the standard require warming and sustaining treatment.

An increase of temperature beginning each day a little earlier is a bad sign; one beginning later promises well. A decrease of fever beginning each day earlier is a good sign, but if later each day, is a bad one. A very high temperature, say 105 degrees, is dangerous in itself, but more so if it has come on gradually as the last of a series, the temperature having grown daily higher by half a degree or more. A fall of temperature below normal is far more dangerous than a much greater corresponding rise. One degree below normal is more an indication of a bad condition than two and one-half above normal. In convalescence if there is no rise of temperature after eating there is no nourishment secured from the food; if there is a sudden or high rise of more than one degree the food was too stimulating or bulky. To be beneficial in convalescence food must increase the temperature a quarter to half a degree and this must almost subside when digestion is over, though leaving a gradual improvement in the average daily temperature.

Temperature from 106 degrees upward and from 95 degrees downward is extremely dangerous and virtually a sign of fatal ending. As the temperature increases or decreases from normal toward these extremes, it consequently becomes more threatening. Temperature should be taken by placing the bulb of the clinical thermometer in the rectum or under the tongue.

There is a close connection between the temperature and the pulse, both of which guide the judgment in matters of health. The pulse is most rapid at birth, and becomes constantly slower until old age, ranging from a maximum at the beginning of 130 to 150 pulsations a minute to a minimum at the end of life of 50 to 65 pulsations. The average pulse through the period of adult life is from 70 to 75 beats per minute. It is considered that every rise of temperature of one degree above normal corresponds with an increase of ten beats of the pulse per minute.

We have already spoken of the importance of the bath in health. Baths have their equal importance in sickness, and their direct effect upon many diseases. All the vital organs are affected through the skin, and by keeping it in a healthy condition the circulation of the blood, the action of the kidneys and bowels and all the digestive processes are promoted, many diseases warded off, and the assimilation of food aided. In many fevers, for instance, a sponge bath with water a few degrees cooler than the normal temperature of the body will give great comfort and relieve and reduce the temperature materially. A warm bath with water about at the temperature of the body, or a degree or two less, produces no shock to the system but makes the pulse beat a little faster and causes a little more activity of circulation.

Put bran enough in the water to make it milky, and the bath will assist in softening the skin, when it is dried and flaky. Put in a pound of rock salt to every four gallons of water and you will find the bath useful in invigorating feeble constitutions.

Thirst is Nature's Signal that the system needs an increased supply of water just as truly as appetite shows need for food. It is relieved not only by water but by barley water, toast water and similar drinks, by small pieces of ice held in the mouth, and by drinks made from the juices of fruit. Care must be used, however, in the employment of these apparently harmless things, or injury may follow from taking them to excess.

Bed Sores are the inflamed spots which occur on the body, often as a result of carelessness during a long illness. They are not likely to occur if the bedding is kept smooth and free from wrinkles and the patient kept dry, his position varied as frequently as possible, and the proper bathing not neglected. If such sores threaten there are

several remedies which will help to prevent them. Alcohol, brandy or glycerine rubbed over the parts exposed to pressure, after washing in the morning and evening, will serve to harden the place where applied. A solution of nitrate of silver, painted on threatened but unbroken skin as soon as it becomes red, will prevent sores. In the early stage of bed sores apply a mixture of equal parts of rectified spirits and white of egg. Put it on with a feather and renew as it dries till an albuminous coating is formed. For bed sores occurring in typhoid and other fevers an excellent prescription is composed of two parts of castor oil and one of balsam of Peru, which are spread on pieces of lint, laid on the sore and covered with a linseed poultice to be changed three or four times a day.

The Characteristics of Fever are a rising of the temperature, and, as a rule, increased rapidity of the circulation as shown by the pulse, and alterations in the secretions of the body, which are usually diminished. Fever diet consists in giving the patient plenty of milk, arrowroot or broth, composing a light, easily-digested fluid diet, every three hours, day and night. If milk alone is used the patient can take from three to five pints in twenty-four hours. The general treatment recommended for fevers consists in sponging off the body of the patient under the bed clothes with cool water three or four times a day, keeping him lightly covered, the room well ventilated, and its temperature from sixty-eight to seventy degrees. He should be given plenty of cooling drinks in small quantities from fear of overloading his stomach, but frequently repeated even if he has to be coaxed to take them. The secretions of the kidneys and bowels must be kept up by such medicines as are prescribed by the physician in charge.

SIMPLE HOUSEHOLD REMEDIES, HERBS AND OTHERWISE

Those who live in the city, where a doctor can be summoned in a few minutes, if needed, cannot realize how important it is that the farmer's wife should keep a supply of simple remedies on hand and know how to use them. It is a good plan to have an herb bed in one corner of the garden, where catnip, thoroughwort, camomile, hoarhound, pennyroyal, etc., can be grown. These are nature's remedies and are often just as effective and always safer than strong drugs. Almost all kinds of herbs should be gathered while in blossom and

tied up in bunches until dry. Then put them in bags, keeping each kind separate, and labeling them. The bags keep them clean and the labels enable one to find them quickly. In the springtime when one feels languid and miserable, a cup of boneset or thoroughwort tea, taken several mornings in succession, will arouse the sluggish liver and make quite a difference in one's feelings.

For sprains, bruises and rheumatism steep tansy in vinegar, having it almost boiling hot; wring woolen cloths out of it and apply, changing often. Plantain grows almost everywhere and is very useful as a medicine. A strong tea made of the leaves or a poultice made of them and applied quite hot to the cheek will relieve facial neuralgia. A tea made of the seeds and taken in tablespoonful doses every ten minutes is good for sick stomach.

If it is desirable to preserve plant remedies make a strong decoction by steeping in water kept just below boiling point half an hour. Strain it and to one pint of the liquid add one gill of alcohol. Put it in bottles, cork tightly and it will retain its virtues as long as desired.

Many fruits and vegetables possess valuable medicinal properties. Tomatoes, either canned or fresh, are a pleasant remedy for constipation. Blackberry cordial is an old and well-tried remedy for diarrhea and dysentery. To prepare it get the fresh berries; mash them with a potato masher and let them stand several hours; then strain out the juice. To one quart of juice add one pound of granulated sugar and one heaping teaspoonful each of cloves, cinnamon, allspice and nutmeg. All the spices except the nutmeg should be tied in a cheesecloth sack before they are put in. Boil until it is a rich syrup; put it in bottles and seal while hot.

Many housewives who have used borax in various ways have never known its value as a medicine. It is almost the only antiseptic and disinfectant known that is entirely safe to use. Clothes washed in borax water are free from infection, and can be worn again without fear of contagion. A solution of ten grains of borax to one ounce of pure soft water is an excellent lotion for sore eyes. Apply it two or three times a day until it strengthens and heals them. Half a teaspoonful of borax and a pinch of salt dissolved in a cupful of water and used frequently as a gargle will cure sore throat.

A heaping tablespoonful of table salt or two of mustard stirred

into a glass of warm water will start vomiting as soon as it reaches the stomach, which is one of the best remedies known for poisoning. A teacupful of very strong coffee will nullify the effects of opium, morphine or chloroform.

WHAT TO PUT IN A REMEDY CUPBOARD

In every house there should be a remedy cupboard. We do not mean the ordinary medicine chest with innumerable bottles huddled together, but a well-stocked emergency cupboard, easy of access, and containing simple remedies for the many aches and pains of humanity. Such a medicine chest is considered by some as one of the most important pieces of furniture in the house. It should be more like a little cupboard than a chest. It may be made of a rather shallow box, fitted with shelves, and there should be a door which fastens with a lock and key. The key should be kept by the mother, so that no one can go to the chest without permission. It should be fastened rather high up against the wall. In this chest should be kept everything that experience has proven to be essential in the treatment of such emergency cases as most mothers have to deal with.

No household is conducted without an occasional accident or bruise; burns and ugly cuts are all of frequent occurrence where there are children. If there is a place where one can always find some soft medicated cotton, bandages of different widths, absorbent gauze and a bottle of some antiseptic solution, it will prevent the frantic running about when such articles are needed and save to the sufferer many throbs of pain. To be thoroughly satisfactory the emergency cupboard must be kept in perfect order and systematically arranged. For instance, in one compartment keep the every-day remedies for coughs and colds, such as quinine and listerine, croup kettle, atomizer and a compress and flannel bandages.

There should be prepared mustard plasters, rolls of court-plaster, salves, liniments, lotions, laudanum, pills, porous plasters, castor oil, sulphur, salts, camphor, and in fact everything that is needed should be found here, and in this way many times the cost of the chest will be saved in doctors' bills. Everything should be carefully labeled and so arranged that things can almost be found in the dark.

HOW TO KEEP THE BABY WELL

Many young mothers are anxious to learn all they can about the physiology and hygiene of babyhood. Hours of anxiety might be spared them if they could only profit by the experience of those who have raised large families.

Babies' hands and feet frequently become cold in a room where older people are quite comfortable. This is sometimes caused by having the clothing too tight. Keep the temperature of the room as near seventy degrees as possible and have it well ventilated, but do not allow the little one to lie in a draught, or an attack of colic may be the result. Take him out in the fresh air frequently if the weather is good, but when the wind is blowing and the air is damp the best place for the baby is in the nursery. It is never safe to expose him to all kinds of weather in order to get him used to it, for it may cost his life.

Give the baby a bath every day in hot weather, never having the water cool enough to cause him to catch his breath, nor warm enough to make him cry. He will soon learn to enjoy it. "My baby will laugh and clap his hands every time he is put in the water," says one happy mother, "and after a few minutes' bath and a good rubbing he is ready for a long, refreshing sleep."

If the baby's head becomes covered with a yellow coating rub vaseline well into the scalp, and after it has remained four or five hours take a fine-comb and carefully comb it all off; wash thoroughly with soft water and good toilet soap as often as may be necessary to keep the scalp white and healthy. The vaseline loosens the scurf and makes it easy to comb out.

Nothing is so important as the baby's diet. Of course the mother's milk is the food nature intended for him, but frequently the supply is not sufficient for his needs, and there are many cases where it is impossible for a mother to nurse her baby. Cow's milk is sometimes used, but the result is seldom satisfactory. It sours so easily in warm weather and is then really poisonous to the little one. Then we can never be sure that the cow is healthy, and we seldom have any means of knowing what kind of food she eats, or if the water she drinks is pure. All these things seriously affect the child's health. Various prepared foods are good, but what agrees with one

baby may not agree with another, so the effects of the one chosen should be carefully watched. It should be freshly prepared for each meal; there will then be none of the bad effects that so often follow the use of stale food. Do not get into the habit of offering the baby the bottle every time he cries, regardless of the cause. He may be thirsty, and a few spoonfuls of cold water will quiet him.

Do not feed a baby with a spoon. It is not nature's way, and the sucking motion of the lips and mouth is needed to mix the food with the fluids of the mouth and keep it from getting into the stomach too fast. Use a plain nursing-bottle with a rubber nipple, which should be taken off after each feeding so that both bottle and rubber may be washed thoroughly. Let them soak in hot water two or three times every day to destroy any germs that may be left in them. Under no circumstances ever use a bottle with a long tube of rubber. Absolute cleanliness in everything pertaining to his food is necessary to keep the baby healthy.

Do not put anything in his mouth that needs chewing, until he has his teeth. In fact until he is seven months old the prepared food will be all that is necessary for him. After that he will take a little oatmeal gruel that has been strained through a coarse wire sieve to remove the husks, or some of the excellent preparations of wheat now on the market. If he is constipated, the juice of stewed fruit is beneficial given in small quantities.

CHAPTER IV

CONDENSED RULES FOR EMERGENCIES

Poisons and Their Treatment—Bites, Stings, Bruises, Splinters, Cuts, Sprains and Burns—Lockjaw—Poison Ivy—How to Bring the Drowned to Life—Suffocation—Fainting—Sunstroke—Freezing—The Eyes and How to Care for Them—Earache and Toothache—Felons, Warts, Corns and Boils—Home Remedies for Diphtheria—Treatment of Smallpox—Convenient Disinfectants—Sick Room Suggestions—Fruit in Sickness—An Antidote for Intemperance—Milk Strippings for Consumption—Stammering Cured at Home.

Here are some short and simple rules for quick action in the event of accidents.

For Dust in the Eyes, avoid rubbing, and dash water into them. Remove cinders, etc., with the rounded end of a lead pencil or a small camel's-hair brush dipped in water.

Remove Insects from the Ear by tepid water; never put a hard instrument into the ear.

If an Artery Is Cut compress above the wound; if a vein is cut compress below.

If Choked get upon all fours and cough.

For Light Burns dip the part in cold water; if the skin is destroyed cover with varnish.

Smother a Fire with carpets, etc.; water will often spread burning oil and increase the danger.

Before Passing through Smoke take a full breath and then stoop low; but if carbonic acid gas is suspected then walk erect.

Suck Poisoned Wounds unless your mouth is sore. Enlarge the wound, or better, cut out the part without delay. Hold the wounded part as long as can be borne to a hot coal or end of a cigar.

POISONS AND THEIR TREATMENT

The treatment of poisons in general consists of the use of substances which, by combining chemically with an injurious dose, will neutralize, as acids with alkalies and vice versa; by solvents, which

take up the poison, as olive oil with carbolic acid; and by emetics which produce vomiting and dislodge the poison. The stomach pump is also used, if available, to empty the stomach, and for some poisons electricity is used.

If the exact poison is unknown it is best to follow a general plan of treatment. We want an emetic, an antidote and a cathartic. For the first a draught of warm water and tickling the throat with a finger or a feather will generally succeed. For an antidote that will neutralize the great majority of poisons give a mixture of equal parts of calcined magnesia, pulverized charcoal and sesquioxide of iron, mixed thoroughly. Castor oil is the best cathartic for general use in poisoning.

Here are a few special instructions for the treatment of the more common cases of poisoning:

For carbolic acid give olive oil or castor oil or glycerine.

For ammonia give frequently a tablespoonful of vinegar or lemon juice, and follow this with a cathartic of castor oil.

For alcohol empty the stomach by emetics, warm salt water, repeated at short intervals, being the best. If the head is hot, dash cool water upon it. Keep up motion and rubbing and slapping to increase the circulation.

For arsenic, fly poison or paris green, take milk, gruel water with starch dissolved in it, oil and lime water. Be sure and empty the stomach by vomiting. It may require three or four repetitions of an emetic to dislodge the sticky paste from the walls of the stomach. Oil and barley gruel or mucilage water should be given to protect the stomach.

For chloroform and ether, artificial breathing must be stimulated. Lower the head of the patient and elevate the legs. Place ammonia at the nose to be inhaled, and slap the surface of the chest smartly with the fringe of a towel dipped in ice water.

For sulphate of copper or blue vitriol, give an emetic of warm water or mustard and warm water. Do not give vinegar or acids. After vomiting give milk or white of egg and oil.

For mercury poisoning by corrosive sublimate or calomel, give promptly the white of eggs mixed in water or milk. Empty the stomach by vomiting and then give quantities of egg and water or milk or even flour and water.

For opium, morphine, laudanum, paregoric or soothing syrup poisoning cleanse the stomach thoroughly by vomiting, and then give strong coffee. The patient must be kept in constant motion. At the same time he must be frequently aroused by smart blows with the palm of the hand, or switching, and whipping the body with the wet towel. When all else fails artificial respiration should be kept up for a long time.

For phosphorus, heads of matches, etc., use a mixture of hydrated magnesia and cold water in repeated draughts, and produce free vomiting. The emetic is mustard, flour and water. Do not use oil, as it tends to dissolve the phosphorus.

For strychnine, rat poison and the like give an emetic, and after this operates administer draughts of strong coffee. Control the convulsions by inhaling chloroform, a teaspoonful poured upon a napkin and placed near the nostrils. Between paroxysms give chloral dissolved in water. The patient should be allowed to go to sleep if so inclined and under any circumstances kept perfectly quiet, for any shock brings convulsions.

For venomous snake bites tie a bandage tightly above the point of the bite, leave the wound to bleed, and draw from it what poison may remain by sucking, unless you have a sore mouth. Cauterize the wound with caustics, a hot iron or a hot coal. Give alcoholic liquors and strong coffee freely. Dress the wound with equal parts of oil and ammonia.

For poisonous mushrooms give a brisk emetic, then epsom salts and then large and stimulating injections to move the bowels, followed by ether and alcoholic stimulants. The poison of mushrooms is very similar to that of venomous snake bites.

RATTLESNAKE BITES CURED BY SWEET OIL

Few people know that sweet oil, the common olive oil of commerce, the salad oil used on our tables, is a specific for rattlesnake bites. Use both internally and externally. Give the patient a teaspoonful of oil every hour while nausea lasts. Dip pieces of cotton two inches square in the oil and lay the saturated cloth over the wound. In twenty minutes or less bubbles and froth will begin to appear on the surface of the cloth. Remove the square, burn it, and replace it with a fresh square until all the swelling has subsided.

Where rattlesnakes abound every household should keep a six or eight ounce vial of the best oil ready for emergencies. Avoid rancid or adulterated oil. No whisky or other stimulant is needed, and in a majority of cases the patient is much better off without any other so-called relief than that afforded by the oil.

Relief is accelerated if some one with mouth and lips free from sores and cracks will suck the poison from the bite before applying the patches of oil-saturated cloth. A few drops of oil taken in the mouth before beginning will insure exemption from any disagreeable results.

RATTLESNAKE BITES—A FAVORITE REMEDY

A favorite remedy for a sufferer from rattlesnake bite, which proves very effective, is as follows: Iodide of potassium four grains, corrosive sublimate two grains, bromine five drachms. Ten drops of this compound taken in one or two tablespoonfuls of brandy or whisky make a dose, to be repeated at intervals if necessary.

POISON IVY, OAK AND SUMAC—REMEDIES

It is unfortunate that some of the most attractive plants that grow in woods, ivy, oak and sumac, for instance, are poisonous in their effects. They act differently, however, on different people, for some seem not to be susceptible under any circumstances, while others are poisoned by simple contact with clothing that has touched the noxious plant. The remedies likewise do not in every case affect people with the same degree of success.

Various remedies are used in case of poisoning from ivy. The affected parts may be bathed with water in which hemlock twigs or oak leaves have been steeped. Fresh lime water and wet salt are likewise recommended. Spirits of niter will help to heal the parts when bathed freely with it. Another suggestion is to bathe the poisoned part thoroughly with clear hot water, and when dry paint the place freely three or four times a day with a feather dipped in strong tincture of lobelia. A similar application of fluid extract of gelsemium sempervirens (yellow jessamine) is likewise very effective.

BEE AND WASP STINGS—HOW TO SOOTHE THEM

A beekeeper advises that those who are around bees should have a small bottle of tincture of myrrh. As soon as one is stung apply a

little of the tincture to the sting, when the pain and swelling cease. It will also serve well for bites of spiders and poisonous reptiles. If an onion be scraped and the juicy part applied to the sting of wasps or bees the pain will be relieved quickly. Ammonia applied to a bite from a poisonous snake, or any poisonous animal, or sting of an insect, will give immediate relief and will go far toward completely curing the injury. It is one of the most convenient caustics to apply to the bite of a mad dog.

BORAX FOR INSECT BITES

Dissolve one ounce of borax in one pint of water and anoint the bites of insects with the solution. This is good for the irritation of mosquito bites and even for prickly heat and like summer irritations. For the stings of bees or wasps the solution should be twice as strong.

Another Simple Remedy.—For bee or wasp stings bathe the part affected with a teaspoonful of salt and soda each in a little warm water. Apply the remedy at once after being stung. If this be used just after one is stung there will be no swelling. If one is off in the field and is stung take a common hog weed and rub the part vigorously therewith. It will stop the pain and prevent swelling.

HOW TO TREAT A SPRAIN

In treating a sprain wring a folded flannel out of boiling water by laying it in a thick towel and twisting the ends in opposite directions; shake it to cool it a little, lay it on the painful part and cover it with a piece of dry flannel. Change the fomentations until six have been applied, being careful not to have them so hot as to burn the skin. Bandage the part if possible, and in six or eight hours repeat the application. As soon as it can be borne, rub well with extract of witch hazel.

HOW TO TAKE SORENESS FROM A CUT MADE BY GLASS

If one should sustain a wound by stepping on a piece of glass, as children frequently do, soreness and much pain may be avoided by smoking the wound with slow-burning old yarn or woollen rags.

NAIL WOUNDS IN THE FOOT—HOW TO RELIEVE THE PAIN

To relieve from the suffering produced by running a nail in the foot of a horse or a man, take peach leaves, bruise them, apply to the wound, and confine with a bandage. They give relief almost immediately and help to heal the wound. Renew the application twice a day if necessary, but one application goes far to destroy the pain.

TURPENTINE FOR LOCKJAW

A simple remedy recommended for lockjaw is ordinary turpentine. Warm a small quantity of the liquid and pour it on the wound, no matter where the wound is, and relief will follow immediately. Nothing better can be applied to a severe cut or bruise than cold turpentine, which is very prompt in its action.

BRUISES, SPLINTERS, CUTS AND BURNS—SIMPLE REMEDIES

The Best Treatment for a Bruise is to apply soft cloths wet with hot water, and if the contusion is very painful a little laudanum may be added to the water.

To Extract a Splinter from a child's hand, fill a wide-mouthed bottle half full of very hot water and place its mouth under the injured spot. If a little pressure is used the steam in a few moments will extract the splinter.

Before Bandaging a Cut wash it thoroughly with some antiseptic solution. When it is perfectly clean bring the edges together and hold in place with warm strips of adhesive plastering. Leave a place between them for the escape of blood, and apply a dressing of absorbent gauze. When the wound is entirely healed the plaster may be easily removed by moistening at first with alcohol.

The Stinging Pain of a Superficial Burn may be instantly allayed by painting with flexible collodion, white of egg, or mucilage. If the skin is broken apply a dressing of boracic acid ointment or vaseline.

BURNS AND THEIR TREATMENT

Common cooking soda, as found in every kitchen, is a convenient remedy for burns and scalds. Moisten the injured part and then sprinkle with dry soda so as to cover it entirely and loosely wrap it with a wet linen cloth.

Another convenient remedy for the same kind of injury, if you have a mucilage bottle at hand, is to brush or pour a coating of the mucilage over the entire injured part. The chief cause for pain from burns and scalds is their exposure to the air, and the mucilage coating will keep the air from coming in contact with the inflamed tissue.

The following is the recommendation of an eminent physician for treating burns from gunpowder:

"In Burns from Gunpowder, where the powder has been deeply imbedded in the skin, a large poultice made of common molasses and wheat flour, applied over the burnt surface, is the very best thing that can be used, as it seems to draw the powder to the surface, and keeps the parts so soft that the formation of scars does not occur. It should be removed twice a day, and the part washed with a shaving brush and warm water before applying the fresh poultice. The poultice should be made sufficiently soft to admit of its being readily spread on a piece of cotton. In cases in which the skin and muscles have been completely filled with the burnt powder we have seen the parts heal perfectly without leaving the slightest mark to indicate the position or nature of the injury."

COLD WATER FOR ORDINARY RECENT BURNS

The best treatment for ordinary recent burns at first is cold water, which soothes and deadens the suffering. The burnt part should, therefore, be placed in cold water, or thin cloths dipped in the cool liquid should be applied and frequently renewed. In a short time, however, the cold water fails to relieve and then rags dipped in carron oil (a mixture of equal parts of linseed oil and lime water, well shaken before using) should be substituted for the water. When the treatment with carron oil begins, however, care should be taken to keep the rag moist with it until the burn heals. This is the main point in the treatment, so the authorities say. The cloth must not be removed or changed.

TO RELIEVE A SCALDED MOUTH

To relieve a scald on the interior of the mouth from taking hot liquids, gargle with a solution of borax, and then hold in the mouth a mucilage of slippery elm, swallowing it slowly if the throat also has been scalded. The slippery elm may be mixed with olive oil.

HOW TO BRING THE APPARENTLY DROWNED TO LIFE

The bringing to life of those who are apparently drowned is something that should be understood by every person, for such emergencies may rise at any time or place when no professional relief is at hand. There are astonishing instances of revival after a considerable time has passed, and it is worth while to persist in the effort most energetically and constantly for a long time before hope is given up. The following rules for saving the life of those who are apparently drowned are made up from various sources, official and otherwise, and may be accepted as thoroughly reliable.

Whatever method is adopted to produce artificial breathing, the patient should be stripped to the waist and the clothing should be loosened below the waist, so that there shall be no restraint on the movement of the chest and body. Lose no time in beginning. Remove the froth and mucus from the mouth and nostrils and the mud, too, if any has been drawn in. Hold the body for a few seconds with the head sloping downward, so that the water may run out of the lungs and windpipe.

The tip of the tongue must be drawn forward and out of the mouth, as otherwise it will fall back into the throat and impede breathing. This is an important matter, for if it is not done successfully all that would otherwise be gained by artificial breathing may not be accomplished. If you are not alone the matter becomes simpler. Let a bystander grasp the tongue with a dry handkerchief to prevent it slipping from the fingers, or he may cover his fingers with sand for the same purpose. If you are alone with the patient draw the tongue well out and tie it against the lower teeth in this manner: Lay the center of a dry strip of cloth on the tongue, which is drawn out over the teeth, and cross it under the chin. Carry the ends around the neck and tie them at the sides of the neck, which will keep the tongue from slipping back. You are now ready to begin the actual restoration of life.

If the ground is sloping turn the patient upon the face, the head down hill; step astride the hips, your face toward the head, lock your fingers together under the abdomen, raise the body as high as you can without lifting the forehead from the ground, give the body a smart jerk to remove the accumulating mucus from the throat and

water from the windpipe; hold the body suspended long enough to slowly count five; then repeat the jerks two or three times.

The patient being still upon the ground, face down, and maintaining all the while your position astride the body, grasp the points of the shoulders by the clothing, or, if the body be naked, thrust your fingers into the armpits, clasping your thumbs under the points of the shoulders, and raise the chest as high as you can without lifting the head quite off the ground and hold it long enough to slowly count three.

Replace the patient slowly upon the ground, with the forehead upon the bent arm, the neck straightened out, and the mouth and nose free. Place your elbows against your knees and your hands upon the sides of his chest over the lower ribs, and press downward and inward with increasing force long enough to slowly count two. Then suddenly let go, grasp the shoulders as before, and raise the chest; then press upon the ribs, etc. These alternate movements should be repeated ten to fifteen times a minute for an hour at least, unless breathing is restored sooner. Use the same regularity as in natural breathing.

After breathing has commenced and not before, unless there is a house very close, get the patient where covering may be obtained, to restore the animal heat. Wrap in warm blankets, apply bottles of hot water, hot bricks, etc., to aid in the restoration of heat. Warm the head nearly as fast as the body, lest convulsions come on. Rubbing the body with warm cloths or the hand and gently slapping the fleshy parts may assist to restore warmth and the breathing also.

When the patient can swallow give hot coffee, tea or milk. Give spirits sparingly, lest they produce depression. Place the patient in a warm bed, give him plenty of fresh air and keep him quiet.

Another method which is perhaps simpler than the first and equally effective is as follows:

The water and mucus are supposed to have been removed from the mouth, and the tongue secured by the means above described. The patient is to be placed on his back, with a roll made of a coat or a shawl under the shoulders. The nurse should kneel at the head and grasp the elbows of the patient and draw them upward until the hands are carried above the head and kept in this position until one, two, three can be slowly counted. This movement elevates the ribs,

expands the chest and creates a vacuum in the lungs into which the air rushes, or, in other words, the movement produces inspiration. The elbows are then slowly carried downward, placed by the sides and pressed inward against the chest, thereby diminishing the size of the latter and producing expiration. These movements should be repeated about fifteen times during each minute for at least two hours, provided the signs of animation present themselves.

WHEN ONE FALLS INTO THE WATER

If a person who cannot swim falls into deep water, it is still possible in many instances for him to save his own life if he can keep his wits about him. Remember that one always rises to the surface at once after falling into deep water, and that the person must not raise his arms or hands above the water unless there is something to take hold of, for the weight thus raised will sink the head below the point of safety. Motions of the hands under water, however, will do no harm, for in quiet water, with the head thrown back a little, the face will float above the surface unless heavy boots and clothing drag the person down. The slow motion of the legs as if walking upstairs, keeping as nearly perpendicular as possible, will help to keep one afloat until aid comes.

WHAT TO DO IN CASE OF SUFFOCATION

Suffocation from any cause may be treated in some details the same as apparent drowning.

For suffocation from hanging, remove all the clothing from the upper part of the body and proceed to restore breathing in the way directed under the subject of drowning. Of course if the neck is broken there is no hope in this.

For suffocation from gas and poisonous vapors, get the person into the open air, relieve the lungs of the gas and restore natural breathing in the same way as directed in case of drowning. Throw cold water upon the face and breast and hold strong vinegar to the nostrils of the patient. If oxygen can be obtained promptly, it should be forced into the lungs.

HOW TO REVIVE A FAINTING PERSON

In a case of fainting lay the patient on his back with his head slightly lower than his feet. Be sure that the room is fully ventilated

with fresh air, and rub gently the palms of the hands, the wrists, the arms and the forehead. Sprinkle a little cold water upon the face and hold to the nose a napkin upon which spirits of camphor, ether, ammonia or vinegar has been sprinkled.

SUNSTROKE AND HOW TO TREAT IT

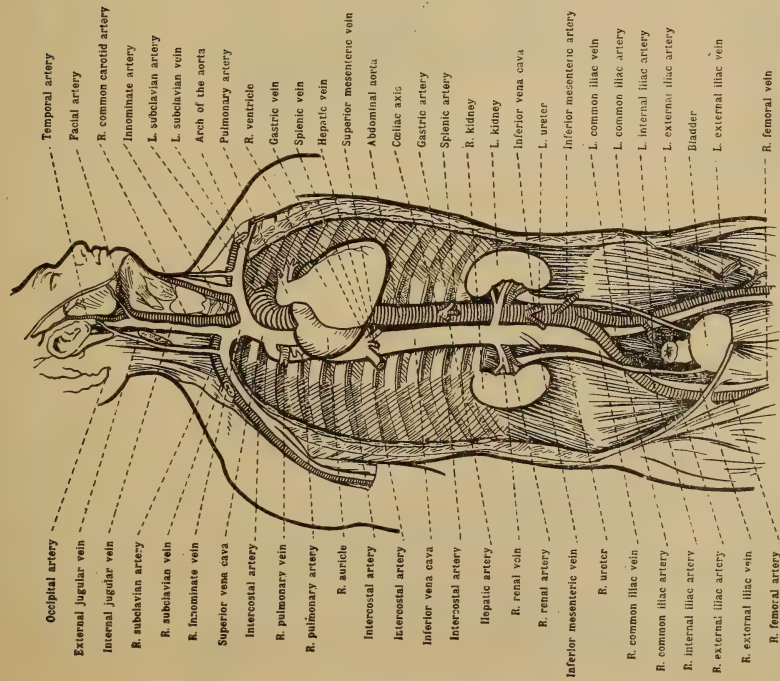
In case of sunstroke get the patient into the coolest place you can, loosen the clothes about his neck and waist, lay him down with his head a little raised, and cool him off as promptly as possible. Cloths wrung out in cold water, applied to the head, wrists and soles of the feet, are the simplest applications. In severe cases of extreme prostration from sunstroke, the patient should be immersed in cold water, and even in an ice pack to get prompt results. After a little recovery is visible careful nursing is the next important thing. Sunstroke is commonly a summer disease, but the same conditions may come from overwork in extremely hot rooms. It begins with pain in the head, or dizziness, quickly followed by a loss of consciousness and complete prostration. The head is often burning hot, the face dark and swollen, the breathing labored, and the extremities are cold. If the latter detail is observed, mustard or turpentine should be applied to the calves of the legs and the soles of the feet, after which the hands should be chafed with flannels or with the palms of the hands. In case of genuine sunstroke lose no time in calling the doctor.

FREEZING AND HOW TO TREAT A CASE

In cases of severe freezing, when a person is apparently frozen to death, great caution is needed. Keep the body in a cold place, handle it carefully, and rub it with cold water or snow for fifteen or twenty minutes. When the surface is red, wipe it perfectly dry and rub with bare warm hands. The person should be then wrapped in a blanket and breathing restored if possible as already directed. It may be necessary to continue the treatment energetically for several hours. A little lukewarm water, or wine, or ginger tea is recommended for the patient to swallow as soon as possible.

THE EYES AND HOW TO CARE FOR THEM

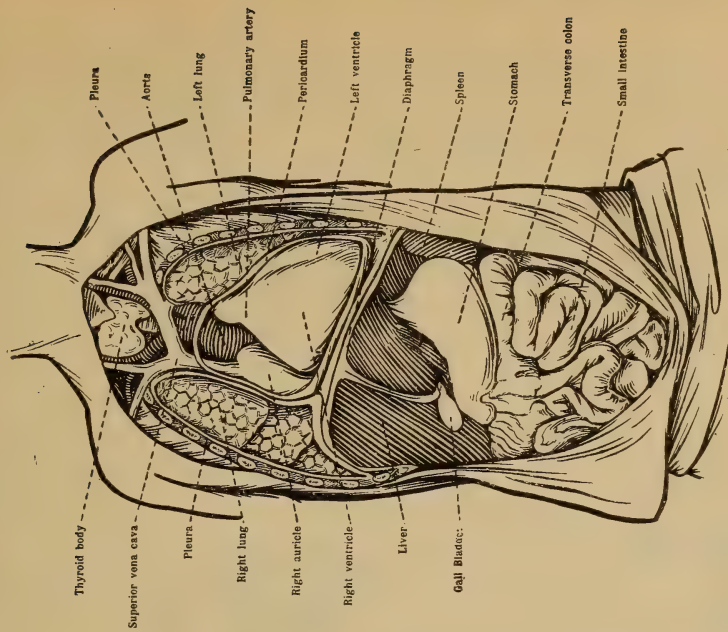
Here are some simple and sound rules for care of the eyes, as formulated by a recognized authority on the subject. Avoid reading



Principal Vessels of the Head, Neck, Upper Extremity, and Trunk.

CIRCULATORY SYSTEM AND VITAL ORGANS.

The distinct vessels which carry arterial blood from the heart and those which return it to the lungs to be purified by the inhaled oxygen, constituting, as is well known, the circulatory system, are well set forth in the above diagram. The vital organs of the upper and lower portions of the trunk are also clearly delineated. In the consideration and care of the human body such diagrams, simple though they be, cannot be too often consulted.



The Thoracic and Abdominal Organs.

No. 1.

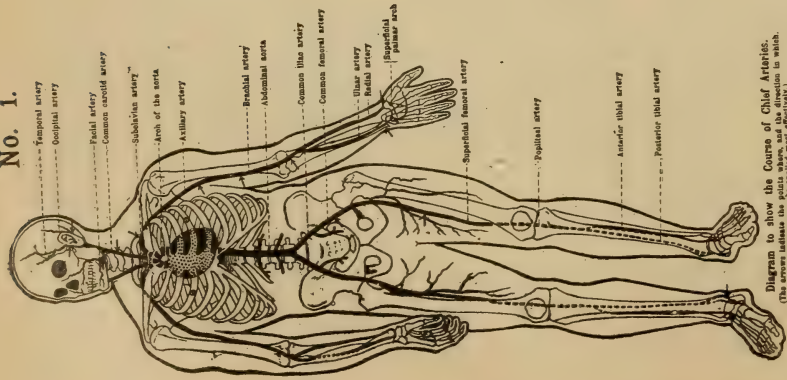
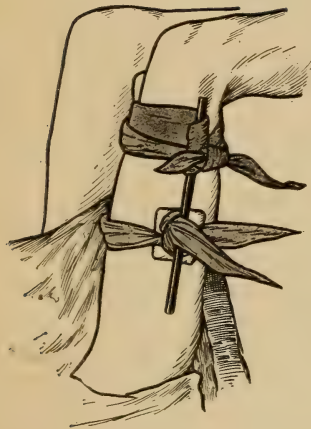
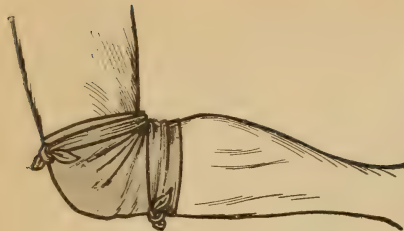


Diagram to show the Course of Chief Arteries.
(The arrows indicate the points where, and the direction in which, pressure can be applied most effectively.)



Improvised Tourniquet applied.

Four-Tailed Bandage for Knee.



Fracture of Forearm put up with Vaseline Blind Laths.
NOTE:—The bound arm being so supported by elastic bands.



Fracture of Humerus put up with Vaseline Blind Laths.

INJURIES TO BLOOD VESSELS AND BONES.

In studying the full length diagram, it should be remembered that arterial blood is red, and to stop its flow pressure should be applied above the injury, thereby cutting off the current which comes from the heart. If the blood is of a dark color, it is returning to the heart through the veins, and the pressure should be applied below the injury. A simple tourniquet, when the injury is to a large leg artery, is shown above, as well as a leg bandage and easily-made slings to be used in fractures of both the upper arm (humerus) and the lower, or forearm.

and study by poor light. Light should come from the side of the reader, and not from the back nor from the front. Do not read or study while suffering great bodily fatigue or during recovery from illness. Do not read while lying down. Do not use the eyes too long at a time for anything that requires close application, but give them occasional periods of rest. Reading and study should be done systematically. During study avoid the stooping position, or whatever tends to produce congestion of the blood in the head and face. Read with the book on a level with the eyes, or nearly so, instead of in your lap. Select well printed books. Correct imperfection in sight with proper glasses, not selected carelessly by yourself or bought from an irresponsible wandering peddler, but properly fitted by an educated optician. Avoid bad hygienic conditions and the use of alcohol and tobacco. Take sufficient exercise in the open air. Let physical culture keep pace with mental development, for imperfection in eyesight is most usually observed in those who are lacking in physical development.

STYES AND THEIR TREATMENT

A sty is a small boil which projects from the edge of the eyelid, and is sometimes much inflamed and very painful. A poultice of linseed meal or bread and milk will soothe it and soften it. When the sty forms a head showing matter, pierce it with a clean, sharp needle and then apply some mild, soothing ointment.

TO TAKE THE COLOR FROM A BLACK EYE

A black eye is usually caused by a blow and may be a very disfiguring object. If inflamed and painful wash the eye often with very warm water, in which is dissolved a little carbonate of soda. A repeated application of cloths wrung out of very hot water gives relief. A poultice of slippery elm bark mixed with milk and put on warm is also good. To remove the discoloration of the eye bind on a poultice made of the root of "Solomon's seal." It is often found sufficient to apply the scraped root at bedtime to the closed eye and the blackness will disappear by morning.

TO REMOVE BITS OF DIRT FROM THE EYE

To remove dirt or foreign particles from the eye take a hog's bristle and double it so as to form a loop. Lift the eyelid and gently

insert the loop under it. Now close the lid down upon the bristle, which may be withdrawn gently and the dirt should come with it.

Another Process.—Take hold of the upper eyelid with the forefinger and thumb of each hand, draw it gently forward and down over the lower lid, and hold it in this position for about a minute. When at the end of this time you allow the eyelid to resume its place, a flood of tears will wash out the foreign substance, which will be found near the lower eyelid.

If lime gets into the eyes, a few drops of vinegar and water will dissolve and remove it.

Olive oil will relieve the pain caused by any hot fluid that may reach the eye.

A particle of iron or steel may be extracted from the eye by holding near it a powerful magnet.

When Something Gets into Your Eye.—An easy method of removing bits of foreign bodies from the eye is to place a grain of flaxseed under the lower lid and close the lids. The seed becomes quickly surrounded by a thick adherent mucilage which entraps the foreign body and soon carries it out from the angle of the eye.

QUICK RELIEF FOR EARACHE

To relieve earache take a small piece of cotton batting, depress it in the center with the finger and fill up the cavity with ground black pepper. Gather it into a ball and tie it with thread. Dip the pepper ball into sweet oil and insert it in the ear, then putting cotton over the ear and using a bandage or cap to keep it in place. This application will give immediate relief and can do no injury.

Another Remedy—Take a common tobacco pipe, put a wad of cotton into the bowl and drop a few drops of chloroform into it. Cover this with another wad of cotton, place the pipe stem to the suffering ear and blow into the bowl. The chloroform vapor will in many cases cause the pain to cease almost immediately.

INSECTS IN THE EAR—TO REMOVE

To destroy insects which fly or crawl into the ear, pour a spoonful of warm olive oil into the ear and keep it there for some hours by means of a wad of cotton batting and a bandage. Afterward it may be washed out with warm water and a small syringe.

TOOTHACHE—A QUICK RELIEF

One of the best mixtures to relieve acute pain and toothache is made as follows: Laudanum, one drachm; gum camphor, four drachms; oil of cloves, one-half drachm; oil of lavender, one drachm; alcohol, one ounce; sulphuric ether, six drachms, and chloroform, five drachms. Apply with lint, or for toothache rub on the gums and upon the face against the tooth.

DISAGREEABLE BREATH—HOW TO CURE

Of course if the trouble comes from the teeth by decay, it is a case for the dentist, and if because the teeth are not properly and frequently cleaned, the remedy is a toothbrush and a good tooth powder.

Bad breath, however, is frequently the result of low vitality or torpidity of the excretory organs, either the skin, bowels, kidneys, liver or lungs. Should one of these, the bowels, for instance, become affected, the others have more work to do. The lungs then have to throw off some of this waste matter, and the result is bad breath. If from one of these causes, or from the stomach, or from catarrh in the nose, a doctor should be called to treat the difficulty intelligently.

For temporary cleansing of the breath, however, the following recommendations are good: A teaspoonful of listerine to half a glass of water makes a wholesome and refreshing gargle and mouth wash. No harm is done if some of it be swallowed. A teaspoonful of powdered charcoal is a good dose to take. A teaspoonful of chlorine water in half a glass of water makes another good mouth wash.

Of course the teeth should be brushed twice a day at all times, and the listerine is the best of lotions for that use, particularly when used alternately with powdered chalk to whiten the teeth. Do not use a brush that is too stiff, and never brush so hard that you make the gums bleed.

TO STOP NOSEBLEED

A correspondent in the *Scientific American* declares that the best remedy for nosebleed is in the vigorous motion of the jaws, as if in the act of chewing. A child may be given a wad of paper or a piece of gum and instructed to chew steadily and hard. It is the motion of the jaws that stops the flow of blood.

HICCOUGHS—A SIMPLE CURE

A safe and convenient remedy for hiccoughs is to moisten a teaspoonful of granulated sugar with a few drops of vinegar. The dose is easy to take and the effect is almost immediate.

FELONS OR WHITLOWS AND THEIR TREATMENT

A felon, or whitlow, although not very large, may become not only very painful but dangerous if neglected. The milder ones may be treated with hot water, cloths and poultices, and if matter forms may be relieved by a lancet. There are others, however, which, if neglected, gradually affect the bone of the finger where they form, and these need the attention of a surgeon as soon as they begin to be very troublesome.

As soon as the finger begins to swell wrap the part affected with cloth soaked thoroughly with tincture of lobelia. This rarely fails to cure. Another simple remedy is to stir one-half teaspoonful of water into one ounce of Venice turpentine until the mixture appears like granulated honey. Coat the finger with it and bandage. The pain should vanish in a few hours. A poultice of linseed and slippery elm will help to draw the felon to a head, and when a small white spot in the center of the swelling indicates the formation of matter it should be carefully opened with the point of a large needle. A poultice of powdered hops will help to relieve the pain.

SIMPLE CURE FOR WARTS

Oil of cinnamon dropped on warts three or four times a day will cause their disappearance, however hard, large, or dense they may be. The application gives no pain and causes no suppuration.

CORNS AND CORN CURES

Corns are always the result of continued pressure, such as wearing shoes too small or not properly fitted to the foot. At first they are merely thickenings of the outer skin, but in time they come to be connected with the true skin beneath, and even with the muscles. There are almost as many corn cures advertised and recommended as there are corns, and sometimes they all fail, but here are a few of the most approved:

Soak the corn for half an hour in a solution of soda, and after paring it as closely as possible without pain apply a plaster of the following ingredients: Purified ammonia, two ounces; yellow wax, two ounces, and acetate of copper, six drachms. Melt the first two together and after removing them from the fire add the copper acetate just before they grow cold. Spread this ointment on a piece of soft leather or on linen and bind it in place. If this application is kept on the corn faithfully for two weeks there should be a certain cure.

The soft corn occurs between the toes and from the same causes, but in consequence of the moisture which reaches it, it remains permanently soft. It may be healed by first cutting away the thick skin from the surface, then touching it with a drop of Friar's balsam and keeping a piece of fresh cotton for a cushion between the toes.

Tincture of arnica or turpentine will serve a similar purpose.

A small piece of lemon bandaged over a corn will help to relieve the pain and enable it to be treated to good advantage.

Corn plasters made of felt, with a hole punched through the center, will cushion the troublesome visitor so that it may be treated with the proper remedies and the pain be relieved at the same time.

BOILS AND CARBUNCLES—HOW TO TREAT THEM

Boils prove that an impurity exists in the blood, and the general health should be improved by means of careful diet and regular habits. The bowels must be kept open and regular, and the food should be simple, easily digested, and not heating.

Poultice the boil from the beginning with bread and linseed meal mixed with a little glycerine or sweet oil. When fully to a head and ripened the boil should be opened and the pus drained out. Then dress the wound with some soothing ointment spread on soft linen.

Carbuncles are apt to be much more serious than ordinary boils, and are very weakening to the system, in which they show a weakness already to exist. They should be carefully poulticed and treated as above, but the best advice is to call a good doctor and draw on his knowledge of treatment at once.

THE PROPER WAY TO MAKE A MUSTARD PLASTER

The making of a mustard plaster may seem a very simple thing, yet there are few households in which it is properly done. Care and

attention must be given the work in order to have the results satisfactory.

A plaster should never be applied cold to a patient, the shock being too great. It should either be mixed with warm water or well heated after mixing. Strong ground mustard should be used, a little flour added, and the whole stirred to a smooth, thick paste with warm borax water, which soothes and prevents too great irritation. Some nurses add a teaspoonful of molasses or mix the mustard with the white of an egg. When prepared spread a piece of old linen on a warm plate, cover with the mixture, lay a second cloth over and apply at once. If allowed to remain on until the skin is burned or blistered, bathe gently with a little borax water, dry, and rub with vaseline.

DANGER IN DAMP SHEETS

Among the dangers which beset travelers in strange hotels and elsewhere is the really great peril of sleeping in damp sheets. It is hard enough to secure the proper airing of linen and clothes at home. Unless each article is unfolded and its position changed until all the moisture has been driven out of it, it is really not fully dried. As a matter of fact heavy articles, such as sheets, are scarcely ever thoroughly dry, and when delicate persons, perhaps fatigued by a journey, seek rest in a bed made of them, they risk rheumatism and other mischief. In case of doubt it is better to remove the sheets from the bed and sleep in the blankets until assured that the linen is thoroughly dry.

TAR AND TURPENTINE FOR DIPHTHERIA

The vapors of liquid tar and turpentine are of great value in the treatment of diphtheria. The process is simple. Pour equal parts of turpentine and tar into a tin pan or cup and set fire to the mixture. A dense resinous smoke arises which clouds the air of the room. The patient immediately experiences relief. The choking and rattle in the throat stop, the patient falls into a slumber, and seems to inhale the smoke with pleasure. The vapors dissolve the fibrous membrane which chokes up the throat in croup and diphtheria, and it is coughed up readily. A remedy so convenient and so easily given should be in every household for prompt use when necessary.

Turpentine also is a convenient remedy for croup. Saturate a

piece of flannel with it and place the flannel on the throat and chest. In a very severe case three or four drops in a lump of sugar may be taken internally.

TO PREVENT PITTING IN SMALLPOX

By careful treatment, pitting in smallpox may be generally prevented. One successful method is to dissolve India rubber in chloroform and then paint the skin where exposed, with this solution, by means of a soft camel's-hair brush. When the chloroform has evaporated, which it very soon does, a thin film of India rubber is left over the face. This relieves itching and irritation, and permits the patient to be more comfortable in addition to preventing the pitting. Another suggestion is to keep the whole body, face and all, covered with calamine, or native carbonate of zinc, which must be purified and pulverized for the purpose. It may be shaken onto the body from a common pepper box. To assist in relieving the inflammation sprinkle an ounce of powdered camphor between the under sheet and the pad on which it rests, scattering powder the whole length of the bed, and freely where the back and shoulders are lying. This gives great relief to the sufferer.

MEDICAL USES OF WHITE OF EGG

It may not be generally known that there is nothing more soothing for either a burn or a scald than the white of an egg. It is contact with the air which makes a burn so painful, and the egg acts as a varnish, and excludes the air completely, and also prevents inflammation. An egg beaten up lightly, with or without a little sugar, is a good remedy in cases of dysentery and diarrhea; it tends by its emollient qualities to lessen the inflammation, and by forming a transient coating for the stomach and intestines gives those organs a chance to rest until nature shall have assumed her healthful sway over the diseased body. Two, or at the most three, eggs a day would be all that would be required in ordinary cases, and since the egg is not only medicine but food, the lighter the diet otherwise and the quieter the patient is kept the more rapid will be the recovery.

LEMONS OF VALUE IN MANY USES

Lemons have a very wide variety of uses. For all people, either in sickness or in health, lemonade is a safe drink. It corrects

biliousness. It is a specific or positive cure for many kinds of worm and skin diseases. Lemon juice is the best remedy known to prevent and cure scurvy. If the gums are rubbed daily with lemon juice it will keep them in health. The hands and the nails are also kept clean, white and soft by the daily use of lemon instead of soap. It also removes freckles and prevents chilblains. Lemon used in intermittent fever is mixed with strong, hot black tea, or coffee without sugar. Neuralgia may be relieved by rubbing the part affected with a lemon. It is valuable also for curing warts, and it will destroy dandruff on the head by rubbing the roots of the hair with it.

PAINTED WALLS BEST FOR SICK ROOMS

The walls of the room used for sickly members of a family should be painted so they can be easily washed. The painted wall is the only clean wall. A papered wall is an abomination where there is sickness, and a plastered wall can be made safe only by frequent whitewashing. But the painted wall may be washed with disinfectants when necessary, and when painted some dainty shade it is never a trial to sick eyes.

VALUE OF PLANTS IN THE SICK ROOM

It was once thought that it was injurious to the sick to have plants growing in the room, and science never did a kinder thing than when it proved the contrary to be true.

TO AVOID CONTAGION IN THE SICK ROOM

If it is necessary to enter a sick room, particularly where there is fever, these simple rules should be observed to avoid contagion. Never enter fasting. At least take a few crackers or some such simple food before going in. Do not stand between the patient and the door where the current of air would naturally strike you. Avoid sitting on or touching the bed clothes as much as possible, and do not inhale the patient's breath. The hands should always be washed in clean water before leaving the room, in order not to carry infection by them to other people or things you may need to touch. After visiting a fever patient change the clothes if possible. As soon as a fever is over and the patient is convalescent, the dress which has been used by the nurse should be fumigated in the same manner as the bedding, as already explained.

LIME AND CHARCOAL AS DISINFECTANTS

Housekeepers are gradually being educated up to a more practical knowledge of the laws of sanitation, and are coming to understand that cleanliness consists in something more than scrubbing the floors and washing the windows. Hence the following hint: A barrel each of lime and charcoal in the cellar will tend to keep that part of the house dry and sweet. A bowl of lime in a damp closet will dry and sweeten it. A dish of charcoal in a closet or refrigerator will do much toward making these places sweet. The power of charcoal to absorb odors is much greater directly after it has been burned than when it has been exposed to the air for a length of time. Charcoal may be purified and used again by heating it to a red heat. The lime must be kept in a place where there is no danger of its getting wet, and not exposed to the air

CHLORIDE OF LIME AS A DISINFECTANT

Chloride of lime is a great purifier and disinfectant. One pound of it mixed with three gallons of water makes a solution which may be used for many purposes. To purify rooms sprinkle it on the floor and even on the bed linen. Infected clothes should be dipped in it and wrung out just before they are washed. The lime without water may be sprinkled about slaughter houses, sinks, water closets and wherever there are offensive odors, and in a few days the smell will pass away. The odor of decaying vegetables or of dead animals is soon dispersed by the lime.

HOW TO PURIFY FOUL WATER

Two ounces of permanganate of potash thrown into a cistern will purify foul water sufficiently to make it drinkable. This is the disinfectant known as "Condy's solution." It is used in destroying the odors in the hold of vessels, and for many other disinfectant uses.

A WORD CONCERNING GOOD DIGESTION

In a recent novel one of the characters—a woman, of course—is made to speak the following interesting sentiments about husbands: "The very best of them don't properly know the difference between their souls and their stomachs, and they fancy they are wrestling

with their doubts, when really it is their dinners that are wrestling with them. Now, take Mr. Bateson himself; a kinder husband or better Methodist never drew breath, yet so sure as he touches a bit of pork he begins to worry himself about the doctrine of election till there's no living with him. And then he'll sit in the front parlor and engage in prayer for hours at a time till I say to him, 'Bateson,' says I, 'I'd be ashamed to go troubling the Lord with such a prayer when a pinch of carbonate o' soda would set things straight again.' "

A PRACTICAL SPRING REMEDY

It is nourishing and helps to clear out the system, to give sulphur and molasses every night for nine days some time during the spring. Sulphur and cream of tartar may be given instead. This may be made into little pills, using a little molasses to form a paste, and each pill being rolled in sugar.

CASTOR OIL—MAKING IT EASY TO TAKE

Castor oil may be taken with ease if its taste be disguised. One way is to put a tablespoonful of orange juice in a glass, pour the castor oil into the center of the juice, where it will stay without mixing, and then squeeze a few drops of lemon juice upon the top of the oil, rubbing some of the same juice on the edge of the glass. The person who drinks the dose without delay will find the nauseous flavor completely covered.

The French administer castor oil to children in a novel way. They pour the oil into a pan over the fire, break an egg into it and "scramble" them together. When it is cooked they add a little salt or sugar or some jelly, and the sick child eats it agreeably without discovering the disguise.

Castor oil may be beaten with the white of an egg until they are thoroughly mixed and not difficult to take.

CREAM OF TARTAR A MILD CATHARTIC

Cream of tartar is a good laxative. Take a teaspoonful mixed with a little sugar in a cup of warm water at night. If it does not have the desired effect, repeat the dose in the morning. It will often work off colds and other maladies in their incipient stage.

BOILED MILK FOR BOWEL DISEASES

Boiled milk, taken while still hot, is one of the best of foods in almost all bowel complaints, and is very successful as a remedy. In India, where the climate produces many such ailments, it is in constant use for such purposes. A physician in practice there says that a pint every four hours will check the most violent diarrhea, stomach ache, incipient cholera or dysentery. It is soothing and healing to the whole digestive tract. No patient will need other food during bowel troubles, so that the same simple preparation serves at once for medicine and nourishment.

WHEN TO EAT FRUIT AND WHY

If people ate more fruit they would take less medicine and have much better health. There is an old saying that fruit is gold in the morning and lead at night. As a matter of fact it may be gold at both times, but it should be eaten on an empty stomach, and not as a dessert, when the appetite is satisfied and the digestion is already sufficiently taxed. Fruit taken in the morning before the fast of the night has been broken is very refreshing, and it serves as a stimulus to the digestive organs. A ripe apple or an orange may be taken at this time with good effect. Fruit to be really valuable as an article of diet should be ripe, sound and in every way of good quality, and if possible it should be eaten raw. Instead of eating a plate of ham and eggs and bacon for breakfast, most people would do far better if they took some grapes, pears or apples—fresh fruit as long as it is to be had, and after that they can fall back on stewed prunes, figs, etc. If only fruit of some sort formed an important item in their breakfast women would generally feel brighter and stronger, and would have far better complexions than is the rule at present.

FOR FEVER OR SORE THROAT PATIENTS

Put some ice in a towel and crush it until it is as fine as snow and of an even fineness. Then squeeze on it the juice of an orange or lemon, and sprinkle over it a little sugar. It is a very pleasant food for persons suffering with sore throat.

WAKEFULNESS CURED BY LEMON JUICE

The wakefulness that comes from drinking too strong tea or coffee can be conquered, says a household informant, by swallowing a dash of fresh lemon juice from a quartered lemon, placed in readiness on the bedside table, and taken at the time you discover that sleep will not come.

FRUIT AS AN ANTIDOTE FOR INTEMPERANCE

A writer in a European temperance journal calls attention to the value of fruit as an antidote to the craving for liquor. He says: "In Germany, a nation greatly in advance of other countries in matters relative to hygiene, alcoholic disease has been successfully coped with by dieting and natural curative agencies. I have said that the use of fresh fruit is an antidote for drink craving, and this is true.

"The explanation is simple. Fruit may be called nature's medicine. Every apple, every orange, every plum and every grape is a bottle of medicine. An orange is three parts water—distilled in nature's laboratory—but this water is rich in peculiar fruit acids medicinally balanced, which are specially cooling to the thirst of the drunkard and soothing to the diseased state of his stomach. An apple or an orange, eaten when the desire for 'a glass' arises, would generally take it away, and every victory would make less strong each recurring temptation.

"The function of fresh fruit and succulent vegetables is not so much to provide solid nourishment as to supply the needful acids of the blood. Once get the blood pure and every time its pure nutrient stream bathes the several tissues of the body it will bring away some impurity and leave behind an atom of healthy tissue, until, in time, the drunkard shall stand up purified—in his right mind."

HOME REMEDY FOR CONSUMPTION

Dr. B. J. Kendall, of Saratoga Springs, New York, urges the use of milk strippings in curing consumption. He says that milk strippings taken in large quantities immediately after milking, before the animal heat has departed, are the most potent remedy known for building up a poor, debilitated person who is suffering with consumption. "This was only a theory of mine years ago," he says, "but

now I know it to be a fact, for I have demonstrated it to be so. I wish to say it emphatically. If you want to get well drink a quart of strippings. I do not mean any milk from any cow, however poor milk she may give, nor do I mean to take it in a haphazard sort of a way, cold or warmed up or just as it may best suit your convenience; but take it regularly, at the proper time, and in the proper manner, and have all your diet and habits regulated by proper hygienic laws."

STAMMERING CURED AT HOME

It is said that stammering can be cured by this plan: Go into a room alone with a book and read aloud to yourself for two hours, keeping your teeth tightly shut together. Do this every two or three days, or once a week if very tiresome, always taking care to read slowly and distinctly, moving the lips, but not the teeth. Then when conversing with others try to speak as slowly as possible, keeping your mind made up not to stammer. Undoubtedly your teeth and jaws will ache while you are doing it, but the result will be good enough to pay for the discomfort.

CHAPTER V

MISCELLANEOUS RECIPES

Leather Boots Made Waterproof—Glue, Cement, Mucilage and Paste—Ink for All Purposes—Colored Crayons and Pencils—Paint and Whitewash—Soft Soap and Hard Soap—Rats and How to Get Rid of Them—Wood Made Fireproof—To Preserve Wood from Decay—Furniture Repairing—To Harden Lamp Chimneys—A Hundred Handy Suggestions.

It is the small annoyances of life, many a time, that are more troublesome than the really important difficulties with which we have to contend. It is equally true that often we get more real relief and service from some seemingly trifling suggestion than from a whole book full of learning on a ponderous subject. Here in the following chapter is gathered a long list of little suggestions, brief, practical and plain, of the kind that may serve in many a puzzling situation.

LEATHER BOOTS MADE WATERPROOF

Leather boots may be made waterproof by any one of the following methods:

Melt two pounds of old rubber from rubber boots with one ounce of resin and one pint of neat's-foot oil. Pour the liquid from the cloth that was in the old boots and apply it warm to the leather ones, which will be made water and snow proof.

Melt together one ounce each of resin and beeswax and four ounces of beef tallow, adding six ounces of neat's-foot oil when the mixture is nearly cool. Warm the leather boots before the fire and then rub the mixture on them with a soft rag. It will require two thorough applications to make the leather entirely waterproof.

A mixture of one part mutton tallow and two parts beeswax melted together makes a very good waterproofing for leather. Another is made of one pint linseed oil, one-fourth pint spirits of turpentine, four ounces each of beeswax and Burgundy pitch, and one-fourth ounce ivory black. These should be melted together over a fire.

TO PATCH SHOES WITH CEMENT

Shoes may be patched by cementing on a leather patch instead of sewing it, with equally good results. The cement is made of one part pure gutta percha cut into small bits and six parts sulphide of carbon. This can be kept in a bottle for use at all times. Cut the patch somewhat larger than the hole and make it thin at the edge, so that it will join smoothly with the shoe. Clean the place thoroughly and put a coat of the cement on each piece of leather. Have them both warm and press the patch on with a warm flat iron, something solid being in the shoe at the time to keep it from yielding.

PASTE FOR MENDING RUBBER BOOTS

To mend rubber boots cut one pound of rubber into thin, small slices, and melt it over a slow fire until it becomes liquid. Then add one-half pound of powdered resin and continue the melting process. When the liquid is smooth and thin gradually stir in three or four pints of spirits of turpentine. This prevents the rapid thickening and hardening of the compound and the mixture will serve for mending rubber or gluing rubber surfaces. There must be no blaze, for fear of catching the turpentine on fire, as it is quite explosive.

CEMENT FOR RUBBER OR LEATHER

Dissolve an ounce of gutta percha in half a pound of chloroform. Clean the parts to be cemented; cover each with the solution and let dry for twenty or thirty minutes. Then warm each part in the flame of a candle and press firmly together till dry.

LIQUID CEMENT FOR GENERAL USE

A cheap cement for general purposes is made from the following ingredients: White glue, one pound; gum shellac, one ounce; alcohol, four ounces; aqua ammonia, one ounce; soft water, two and one-half pints; dried pulverized white lead, four ounces. Dissolve the shellac in the alcohol and dissolve the glue in the water by heating. When the glue is dissolved stir in the dissolved shellac and the powdered lead, put in the ammonia to keep it in liquid form, and bottle it. This does not need to be applied hot, but when used the parts to be joined must be kept in place till the glue is dry.

GLUE AND CEMENT RECIPES

Waterproof Glue.—Boil eight parts of common glue with about thirty parts of water until a strong solution is obtained; add four and a half parts of boiled linseed oil, and let the mixture boil two or three minutes, stirring it constantly.

Waterproof Cement for Cast Iron Pipes, Etc.—Take equal weights in dry powder, of burnt lime, Roman cement, pipe clay and loam, and knead the whole with about one-sixth the weight of linseed oil. The addition of more Roman cement improves the quality.

Cement Which Resists Moisture and Heat but not the direct application of fire, for gas and steam pipes and similar purposes: Two parts (by weight) of red lead, five parts of white lead, four parts of pipe clay, fine and dry and work the whole into a stiff mass with boiled linseed oil.

Rustproof Cement for Water and Steam Pipes, Steam Boilers, Etc.—Make a stiff paste with two parts (by weight) sal ammoniac, thirty-five parts of iron-borings, one part sulphur and water, and drive it into the joint with a chisel; or to two parts of sal ammoniac and one part flowers of sulphur add sixty parts of iron chips, and mix the whole with water to which one-sixth part vinegar or a little sulphuric acid is added. Another cement is made by mixing one hundred parts of bright iron-filings or fine chips of borings with one part powdered sal ammoniac, and moistening with urine; when thus prepared force it into the joint. It will prove serviceable under the action of fire.

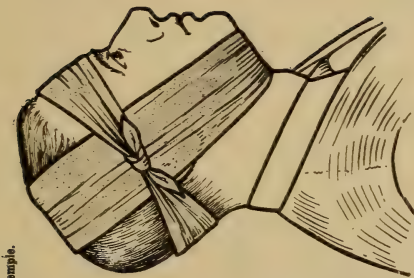
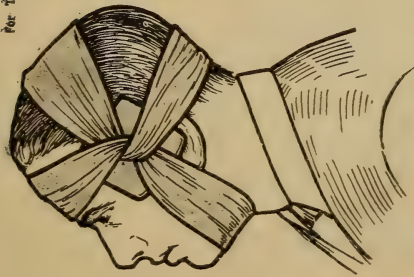
Stove Cement for the Joints of Iron Stoves.—Mica, together with finely sifted wood ashes, an equal quantity of finely powdered clay, and a little salt. When required for use add enough water to make a stiff paste.

Iron Cement, Unaffected by Red Heat.—Four parts iron-filings, two parts clay, one part fragment of a Hessian crucible; reduce to the size of rape seed and mix together, working the whole into a stiff paste with a saturated solution of salt. A piece of fire brick can be used instead of the Hessian crucible.

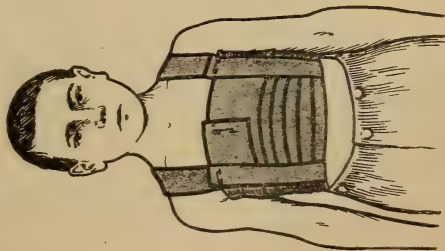
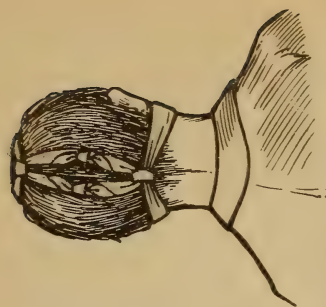
Cement for Fastening Wood to Stone.—Melt together four parts pitch and one part wax, and add four parts brick dust or chalk. It is to be warmed for use, and applied thinly to the surfaces to be joined.

Japanese Cement from Rice.—The Japanese make cement by mixing

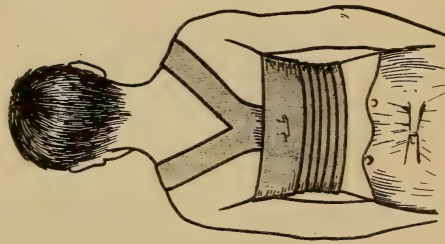
For Temple.



Four-Tailed Bandage for Jaw.



Chest Bandage.



First Method.



For Elbow.



Second Method.

SIMPLE BANDAGES FOR THE INJURED.

It is impossible to tell, especially if children are around, when one will be called upon to bandage wounds in the head, face or other parts of the body. The arms are very liable to injury. Above, therefore, are illustrated simple ways of making bandages to meet a variety of predicaments.

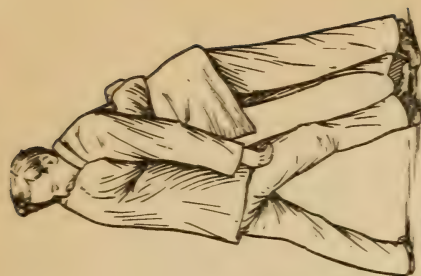
THE "FIREMAN'S LIFT."



First Position



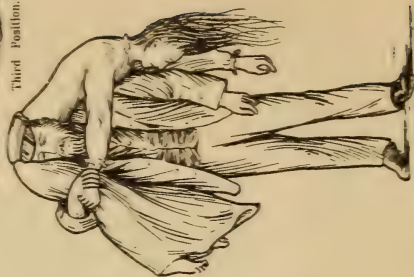
Second Position



Third Position



Fourth Position



Fifth Position (Female)

Fifth Position (Male)

A WAY TO CARRY THE UNCONSCIOUS.

Because the mode illustrated above for carrying unconscious persons was first generally adopted by metropolitan fire brigades, it has become known as the Fireman's Lift. The reader can readily understand, however, that it may be applied in countless emergency cases, such as those of brain injury, sunstroke, drowning, etc. The five positions should be carefully studied, the difference in the fifth being especially noted.

powdered rice with cold water and then gradually adding boiling water till it reaches the proper thickness. It must be well stirred all the time and must be boiled for one minute at the end. This paste is convenient for fancy work of paper or other goods requiring a strong and colorless mixture. It is almost transparent.

MUCILAGE, PASTE AND GLUE

The Simplest Mucilage for Household Use is made by putting gum arabic or gum tragacanth into a bottle and covering it with warm water, leaving it to dissolve. It is easy to test the quantity necessary in making small amounts of the mucilage, but remember that these gums swell very much when water is poured upon them.

Here Is a Paste which can be used for spreading on sheets of paper which are to be gummed and cut apart for labels: Soak four ounces of good glue in a pint of water for one day, after which add half a pound of loaf sugar and three ounces of gum arabic. When these are dissolved it should be stirred into even consistency and then can be brushed onto the sheets of paper, which will not wrinkle or get brittle when dried, nor will the sheets stick together when they are piled upon each other.

Equal Parts of Common Pitch and Gutta Percha, melted in an iron vessel, will make a cement which is not attacked by water and sticks firmly to leather, wood, stone, glass, porcelain, ivory, paper, feathers, wool, cotton, linen and many other substances which common mucilage and glue will not adhere to.

Four Ounces of Glue soaked in one pint of new milk over night and then boiled with care, so as not to burn, will make a glue which resists dampness much better than ordinary glue or mucilage.

Liquid Glue which is always ready for use can be made as follows: Take two ounces of white glue and four ounces of vinegar. Put these into a wide-mouthed bottle and set the bottle in cold water, letting it come to a boil gradually and boiling until the glue is dissolved. Then add one ounce of alcohol and keep corked for use.

INK FOR ALL PURPOSES

Inks for household use are so cheap that they are better bought as they come from the manufacturer in any store than to buy the

ingredients and make them, but if anyone wants to put inks on the market a few recipes will be of service.

A Good Ink, Black from the First, which will not fade, is made with logwood chips, one ounce; powdered nutgalls, twelve ounces; acetate of copper, one-half ounce; purified copperas, three ounces; gum arabic, two ounces, and soft water, one gallon. Boil the logwood in water until the liquid is thoroughly colored, usually less than two hours. After cooling strain it and then put in the other ingredients and boil it again. This must be left some time before using, till it becomes fully fixed in its deep blackness, when it may be strained and bottled. If evaporation reduces the quantity very much, make up the difference with more hot soft water. By putting in three ounces of pulverized sugar it becomes a good copying ink. Strain and bottle for use.

A Fine Ink, Intensely Black When Dry, but easy flowing and bluish-green at first, is made as follows: Twelve ounces of nutgalls, eight ounces sulphate of indigo, eight ounces copperas, a dozen cloves, four ounces gum arabic and three quarts of water. This makes a gallon of ink. The addition of a little sulphuric acid renders the ink more permanent and less likely to mould.

A New Black Ink.—Lactate of iron, fifteen grains; powdered gum arabic, seventy-five grains; powdered sugar, half a drachm; gallic acid, nine grains; hot water, three ounces.

A Convenient Ink for Travelers may be prepared in this fashion: Soak a sheet of thick filtering paper in a very concentrated solution of the aniline color you desire, and allow it to dry, and then soak it again to make it absorb more color. When you wish to write, it is only necessary to tear off a small piece of the paper and let it soak in a little water, and you have a very good ink ready at hand.

A Durable White Ink may be made by thoroughly mixing a little finely ground oxide of zinc with a small quantity of thin mucilage water made by dissolving gum arabic in warm water.

To Make Green Ink, boil two ounces of acetate of copper and one ounce of cream of tartar in eight ounces of water until it is reduced to four ounces. Strain, and when cool bottle the liquid.

To Make Indelible Ink for Marking Clothing, take a tablespoonful of rain-water, half a teaspoonful of vinegar and a small stick of nitrate of silver or lunar caustic. Put these in a small bottle and

keep in a dark place till dissolved. To use this, wet the place upon which the name is to be written, with milk in which has been dissolved baking soda, a piece as big as a grain of corn to each teaspoonful. Press the damp spot with a hot iron and then write the name immediately with a quill pen with the indelible ink.

SYMPATHETIC INKS FOR SECRET WRITING

Sympathetic inks are those liquids which may be used for writing without leaving visible traces on the paper, but which, through the agency of heat, or by the action of chemicals, are made to appear in various colors. There are many such inks known to chemists, some of them very simple and some intricate compounds. Rice water may be used as a writing fluid and on the application of iodine the letters appear in blue. If writing be executed on paper with a clean quill pen dipped in onion juice or turnip juice it becomes absolutely invisible when dry, and when the paper is heated the writing at once appears in brown. Lemon, apple, orange and pear juices likewise may be used in the same way. A diluted solution of chloride of copper used for writing is invisible until the paper is heated, when the letters are seen of a beautiful yellow, disappearing again when the heat is withdrawn.

An Ink Which Makes Visible Writing, but will absolutely fade from the paper within four weeks is made by dissolving soluble iodide of starch in water.

An Ink Which Writes Invisibly, and may be made visible, may be obtained as follows: Use a solution of nitrate or chloride of cobalt or chloride of copper and mix with a little mucilage or sugar. Writing with this mixture will be made visible in brown by warming the paper over the stove or over a burning match.

You Can Erase Ink from Paper and leave the sheet as if it had never been written on, with solutions of cyanide of potassium and oxalic acid. Wash the writing carefully with a soft camel's-hair brush dipped alternately in these solutions.

KEEPING INK OR PASTE FROM MOULDING

If you wish to keep ink, mucilage or paste from moulding add a small quantity of carbolic acid. An ounce of the acid put in the whitewash used in a cellar, basement or hen-house purifies them.

COLORED INKS AND CRAYONS FROM DYES

The ordinary diamond dyes and other package dyes of similar character sold in the drug stores are very convenient for making inks, and for various other purposes. For black ink use the slate-colored dye; for red ink, the magenta; and for purple, violet and green use the dyes of the same color.

To Make Ordinary Writing Ink, moisten the dye with a little cold water, then add a pint of boiling water and stir until dissolved.

For Copying Ink use but half the quantity of water and add two ounces of rock candy.

For Stamping Ink for Rubber Stamps, dissolve the powder in four ounces of glycerine.

Colored Crayons for School Use can be made from the cheap white crayons and the same dyes. Dissolve the dyes according to the directions for coloring wool, and soak the crayons in the hot dye for about fifteen minutes. Keep them warm for about twelve hours, and when dried they will be ready for use.

FIREPROOF PAPER AND INK

Fireproof paper can be made from pulp consisting of 10 parts of vegetable fiber, 20 parts of asbestos, 1 part of borax, 2 parts of alum.

The ink to use on it is made from 85 parts of graphite, 8 parts of copal varnish, 7.5 parts of copperas, 30 parts of tincture of nutgalls, and a sufficient quantity of indigo carmine.

SAFETY PAPER FOR BANK CHECKS

Paper may be prepared for bank checks and legal documents, so that any writing in ink once made thereon cannot be altered without leaving plainly visible marks, by passing the sheets through a solution composed of .015 grains of gallic acid to 1 gill of distilled water.

COLORED PENCILS

Colored pencils for writing upon glass, porcelain, metal, etc., may be made as follows: Black—Ten parts of lampblack, forty parts of white wax, ten parts tallow. White—Forty parts white lead, twenty parts wax, ten parts tallow. Blue—Ten parts Berlin blue, twenty

parts wax, ten parts tallow. Dark blue—Fifteen parts Berlin blue, five parts gum arabic, ten parts tallow. Yellow—Ten parts chrome yellow, twenty parts wax, ten parts tallow.

PRACTICAL ADVICE ON DYES AND DYEING

The time has passed, along with the stage-coach and other valuable things of earlier days, when housekeepers found it wise to use complicated recipes for dyeing their cloth. Such package dyes as are for sale in every store for a few cents are reliable, convenient, speedy, and cheaper than the old methods which used logwood, blue vitriol, potash, acids and other ingredients, not always either common or cheap. It is better advice to suggest buying such package dyes than it is to fill these pages with such recipes.

LIQUID BLACKING FOR LEATHER

A liquid blacking, which may be used for dressing any leather, from carriage tops to ladies' slippers, may be made as follows: Take one quart of alcohol, one-half pound gum shellac, four ounces gum camphor and one ounce lampblack. Dissolve the shellac in the alcohol, which may take some days; then break up the gum camphor and put it into the solution. When it is dissolved add the lampblack. This blacking is waterproof and very serviceable.

LUMINOUS OR NIGHT-SHINING PAINTS

Luminous paints have many uses for night signs, clock faces, house numbers and other things. Here are recipes for many colors:

For Orange Luminous Paint, 46 parts varnish are mixed with 17.5 parts prepared barium sulphate, one part prepared India yellow, 1.5 parts prepared madder lake, and 38 parts luminous calcium sulphide.

For Yellow Luminous Paint, 48 parts varnish are mixed with 10 parts prepared barium sulphate, 8 parts barium chromate, and 34 parts luminous calcium sulphide.

For Green Luminous Paint, 48 parts varnish are mixed with 10 parts prepared barium sulphate, 8 parts chromium oxide green, and 34 parts luminous calcium sulphide.

A Blue Luminous Paint is prepared from 42 parts varnish, 10.2 parts prepared barium sulphate, 6.4 parts ultramarine blue, 5.4 parts cobalt blue, and 46 parts luminous calcium sulphide.

A Violet Luminous Paint is made from 42 parts varnish, 10.2 parts prepared barium sulphate, 2.8 parts ultramarine violet, 9 parts cobaltous arsenate, and 36 parts luminous calcium sulphide.

For Gray Luminous Paint, 45 parts of varnish are mixed with 6 parts prepared barium sulphate, 6 parts prepared calcium carbonate, 5 parts ultramarine blue, 6.5 parts gray zinc sulphide.

A Yellowish-brown Luminous Paint is obtained from 48 parts varnish, 10 parts precipitated barium sulphate, 8 parts orpiment, and 34 parts luminous calcium sulphide.

Luminous Colors for Artists' Use are prepared by using East India poppy oil in the same quantity instead of the varnish, and taking particular pains to grind the materials as fine as possible.

For Luminous Oil-color Paints, equal quantities of pure linseed are used in place of the varnish. The linseed oil must be cold-pressed and thickened by heat.

All These Luminous Paints can be used in the manufacture of colored papers, etc., if the varnish is altogether omitted and the dry mixtures are ground to a paste with water.

The luminous paints can also be used as wax colors for painting on glass and similar objects by adding instead of the varnish ten per cent more of Japanese wax and one-fourth the quantity of the latter of olive oil. The wax colors prepared in this way may also be used for painting upon porcelain, and are then carefully burned without access of air. Paintings of this kind can also be treated with water glass.

RELIABLE WHITEWASH RECIPES

A whitewash which can be applied to any wall and will become waterproof so as to bear washing is made as follows: Take two parts freshly slaked lime still warm, two parts of burnt porcelain clay, three parts of broken marble and sandstone and three parts of silicious rock. All of these must be pounded to powder. Any coloring which can be used with lime may be added. Mix a wash with water and apply thickly to the wall. Let it dry one day and from that time on the more water is put on it the harder it gets. This wash can be cleansed with water without losing any of its color and will become so hard that it can even be brushed.

To Make a Whitewash for Outdoor Use, on wooden or brick walls,

slake half a bushel of good lime in boiling water in a covered vessel and strain it through a sieve. Add a peck of salt dissolved in a small quantity of hot water, three pounds of rice boiled with water to a thin paste, one pound of Spanish whiting, one pound of glue softened by soaking in water and then dissolved, and five gallons of hot water. Stir, cover from dust, and allow to stand several days. Apply hot. This will not be washed off by rain.

GOOD KALSOMINE

To make kalsomine, dissolve one-fourth pound of glue to each ten pounds of whiting, and mix with sufficient water to give it the right consistency. To tint it dissolve a package of diamond dye in a quart of water and add as much of this as is necessary to give the color desired. One package will tint an ordinary bucketful of kalsomine with a good strong color.

GOOD SOFT SOAP RECIPE

To make soft soap, save ashes from hard wood until you have a hopper full. Pour on boiling water—a pailful at a time—until enough strong lye has been procured. Boil the grease in this lye until it flows from a stick like thick molasses. There is little danger of getting too much grease. The lye will consume what is needed and no more. If there is too much simply skim it off when the soap becomes cold.

When the soap does not boil thick like molasses it may be too strong or too weak, or it may be dirty. Either of these causes would prevent it from becoming thick. If the ashes have not been kept free from dust and dirt there is apt to be trouble. Let the thin soap settle, then carefully drain it off, return it to a clean kettle and try it again. If you know it is clean, and boiling does not thicken it, then it is too strong, and you must add rainwater, a very little at a time, until it becomes thick.

To save the soap grease without having it sour, let it accumulate for a week or two, then boil it in a little lye, strain it, and put it away in a jar kept for the purpose until needed. Everything at all greasy can be made use of, even bits of fried ham, for when it is boiled, skimmed and strained it is all perfectly good for soap making.

All scraps of fat and skin intended for use in making soap should be cooked before putting away.

SOFT SOAP MADE AT HOME

To make soft soap, dissolve one pound of concentrated lye in two gallons of soft water, and when it boils add four pounds of soap grease. When it boils till it becomes clear add two gallons more of soft water. You will have to judge for yourself how much cold water to add to bring it to the consistency you like.

HARD SOAP—A SIMPLE RECIPE

To make hard soap with concentrated lye, dissolve two boxes of lye in five gallons of soft water, then add half a pound of resin, broken finely and boil till dissolved, stirring well. Then add half a pound of borax and nine pounds of soap grease in small pieces, and boil about two hours, or till the grease is taken up and it becomes soap. If the grease you use is salty already, stir in half a tumbler of salt, but if not, it will require a full tumbler of salt dissolved in half a gallon of warm water. Stir this in and boil for half an hour longer. Soak a tub well in cold water and pour in the soap and let it stand till cold, after which cut it out into cakes and put in a cool place to dry.

ANOTHER RECIPE FOR HARD SOAP

Take three gallons of soft water, six pounds of sal soda and two pounds of unslaked lime, boiling them together until the soda is dissolved and the lime slaked. Let it settle and pour off the clear liquid. Put this on the fire again with six pounds of clear grease and boil till it comes to soap. Put in a little sassafras oil or oil of caraway for perfume, and then prepare it in bars as suggested heretofore.

HOW TO TEST SOAP

To test soap, shave off a small piece, wet it and put in a hot place for several hours. If it develops a disagreeable odor it is totally unfit for use.

HOW TO MAKE HARD WATER SOFT

Where soft water cannot be obtained, soda, borax or other ingredients are used in hard water to give it the desirable qualities. Here is a mixture which has many uses: Take two pounds of washing soda and one pound of lime, and boil for two hours in five gallons of water. After it cools and settles pour the clear water off into a jug.

A tablespoonful of this mixture in a dishpan of water will help in washing dishes, and the same proportion in scrub water or wash water will help in the housecleaning and laundry work.

Borax put into hard water at the rate of a handful to every ten gallons will make the washing easy.

RATS, AND HOW TO GET RID OF THEM

Rats may be killed, caught or driven away to get rid of them. A convenient way of poisoning them is as follows: Spread some slices of bread with butter. Then sprinkle arsenic on it freely, and over this put a little sugar. Press the sugar and arsenic well into the butter, so they will not fall off. Next cut the slices of bread into small squares and drop them into the rat holes where they will not endanger the children or the household animals which might eat them. Some of the rats will be killed, and others will be driven away; but if you use poison get but a little, use it up as fast as possible, and keep it away from the children and away from all places where food is kept.

It Is Much Better to Drive Out Rats than to poison them, for if they die between the walls they are almost as hard to dispose of as when they are alive. A writer in the *Scientific American* says: "We cleaned our premises of rats by making whitewash yellow with copperas and covering the stones in the cellar with it. In every crevice or hole in which a rat might tread we put crystals of the copperas, and scattered the same in the corners of the floor. The result was a perfect stampede of rats and mice. Since that time not a footfall of either has been heard about the house. Every spring a coat of the yellow wash is given the cellar as a purifier and rat exterminator, and no typhoid, dysentery or fever attacks the family. Many persons seem to deliberately attract all the rats in the neighborhood by leaving fruits and vegetables uncovered in the cellar, and sometimes even the soap is left open for their regalement. Cover up everything eatable in the cellar and pantry and you will soon starve them out. These precautions, joined to the services of a good cat, will prove as good an exterminator as the chemist can provide. We never allow rats to be poisoned in our dwelling, they are so liable to die between the walls and produce much annoyance."

Daub Tar around and in Rat Holes and you will help to drive out

the pests. They do not like to get their feet daubed with anything which is sticky. Chloride of lime, too, will drive them away. Put it into their holes where it will absorb moisture and generate chlorine gas, which they do not like.

Rye Meal and Finely-powdered Lime, unslaked, may be mixed dry, and small dishes of water set near it in places which they infest. The rats will eat it freely, and then seek relief by drinking water, when the gas generated by the slaking lime will put an end to them.

TO REPEL MOSQUITOES AND FLIES

To repel mosquitoes, flies and similar pests when fishing and shooting, mix three ounces of sweet oil and one ounce of carbolic acid. Let this be thoroughly applied upon hands and face and all exposed parts, carefully avoiding the eyes, once every hour, for the first two or three days, when the pests are troublesome. By this time the skin is filled with it, and after this its application will be necessary only occasionally.

Another Recipe Equally Effective is six parts of sweet oil, one part creosote and one part oil of pennyroyal. Either of these is agreeable to use and in no way injurious to the skin.

SULPHUR FOR CELLAR MOULD

Some cellars become infested with mould and fungus so that vegetables soon decay if stored there. Take some sulphur or brimstone, lay it on a pan of live coals in the middle of the cellar and close the doors. In a few hours the mould and fungus will be destroyed, and after ventilation the cellar will be sweet and wholesome again.

TO MAKE NEW ROPE LIMBER

Considerable difficulty is sometimes experienced in handling new rope on account of its stiffness. This is especially the case when it is wanted for halters and cattle ties. Every farmer is aware how inconvenient a new stiff rope halter is to put on and tie up a horse with, and new ropes for tying cattle are frequently unsafe, for the reason that they are not pliable enough to knot securely. All this can be remedied, and new rope made as limber and soft at once as after a year's constant use by simply boiling it for two hours in water. Then hang it in a warm room and let it dry out thoroughly. It retains its stiffness until dry, when it becomes perfectly pliable.

A HANDY FIRE ESCAPE

A good, cheap and portable fire escape can be made of a small rope. Double it and make knots about eighteen inches apart from end to end. This will form rests in which to put the feet while descending from a window if all other escape fails. Attach it to a bedstead, or remove two or three bed slats, put them through one end loop, place the slats horizontally across the window, throw out the rope and then descend.

TO KEEP SOOT OUT OF CHIMNEYS

It is not necessary for chimneys to fill with soot or to burn out if they are properly built. They should be plastered on the inside from bottom to top with a mixture of four parts mortar and one part common salt. Soot does not stick to the surface thus formed.

TO CLEAN WINDOWS IN STOVES

The mica windows in coal stoves, or isinglass, as it is improperly but commonly called, can be cleaned to look almost as good as new after it has been disfigured by smoke. Take the pieces, one at a time, soak them in vinegar and water and rub them with soft flannel, when you will find the appearance very much improved.

LIQUID STOVE POLISH

A good liquid stove polish which gives no offensive smell when the stove is used, and keeps the iron from rusting, is made as follows: Dissolve one ounce of resin in one quart of benzine, and then mix four ounces of powdered plumbago with it. To make a smaller quantity reduce the ingredients in the same proportion.

Another Good Liquid Stove Polish is made by mixing with powdered plumbago enough asphalt varnish to form a thick paste, and adding to it enough turpentine or benzine to thin it sufficiently.

SHINGLES MADE FIREPROOF

Shingles may be made fireproof and more durable by the following process: Into a large kettle or tub put one barrel of lye from wood ashes, or five pounds of concentrated lye, as bought in cans. The latter, of course, must be diluted according to the directions which come with it. Then add five pounds of white vitriol, five pounds of

alum, and as much salt as will dissolve in the mixture. Warm the compound and put as many shingles as can be covered at a time in it. After they have soaked for perhaps two hours take them out and put in others, renewing the mixture when necessary.

The shingles should be put on the roof in the usual way. After they are laid they may be washed or painted with the liquid that is left, putting lime enough into it to make whitewash, or ochre, or Spanish brown for coloring. This wash may be renewed from time to time, and as long as it is kept on, the shingles are fireproof and more waterproof than in their natural state.

TO MAKE WOOD FIREPROOF

Here is a French invention of a fireproof composition for coating wood: Dissolve in cold water as much lye as it will take up, and wash or daub with it all boards to be fireproofed. Then dilute the same liquid with a little water, and add to it enough finely-pounded yellow clay to make it the thickness of common paint. Next stir in a small quantity of flour paste. Paint the boards with three coats of this mixture, and when dry apply the following composition: Put into a pot equal quantities of finely pulverized iron-filings, brick dust and ashes. Pour over them thin glue water, slightly warm, and stir them well together. Now with this composition give one coat to the boards, and after drying, a second one. This preparation, if followed carefully, will resist fire for several hours and indeed will prevent the wood from ever bursting into flames, so that no fire can spread where it is used. It is found that a quantity made by using twenty pounds of clay, a pound and a half of flour for making the paste, and one pound of lye is enough to prepare a surface one hundred feet square.

TO PRESERVE WOOD FROM DECAY

The cheapest, easiest and best method of preserving wood from decay is to saturate it with crude petroleum. Seasoned pine is made almost waterproof by this simple material, which should be applied with a brush until the wood will soak up no more. Crude petroleum is very cheap, but of course inflammable, and care should be taken to avoid accident by fire until it is dry. Creosote is likewise effective for the same purpose.

Fence posts, telegraph poles and other timber to be placed in the ground may be made much more durable by first charring the wood over a hot fire, and then coating it with coal tar. Fence posts last better, too, if placed in the ground with the butt end of the timber upward, because the water does not escape so easily against the natural course of the sap.

WALNUT STAIN FOR WOODWORK

A new process by which ordinary wood has imparted to it the appearance of walnut, suitable for office, steamboat and other cabinet work, has been but recently developed. Birch, beech, alder, or similar woods, are first thoroughly dried and warmed and then coated once or twice with a liquid composed of one part (by weight) of extract of walnut peel dissolved in six parts of soft water by heating it to boiling, and stirring. The wood thus treated is, when half dry, brushed with a solution of one part (by weight) of bichromate of potash in five parts of boiling water, and, after drying thoroughly, is rubbed and polished.

To Stain Wood Dark Mahogany, Cherry or Rosewood Color, any one of the following recipes will be of service: Boil one-half pound of logwood in three pints of water and add one-half ounce salts of tartar. Another recipe: Boil one-half pound madder and one-fourth pound fustic in one gallon of water. Another recipe: Boil one pound of Brazil wood and one ounce of washing soda in one gallon of water. Apply it, and then brush over it before dry a solution of two ounces of alum in one quart of water. With any of these the wood, if dry, may be stained with the liquid cold, but the coloring will be accomplished far more quickly and satisfactorily if the liquids are applied hot.

FURNITURE POLISH

A good and simple furniture polish consists of a little castile soap, scraped into a pint of warm water. Add three tablespoonfuls of sweet oil, heat and apply while hot.

An Excellent Furniture Polish is made with one pint of linseed oil and half a gill of alcohol, stirred well together and applied to the furniture with a linen rag. After this rub dry with a soft cotton cloth; and finish by rubbing with an old piece of silk, when a most beautiful gloss on the furniture will be the result.

TO TAKE OLD VARNISH FROM FURNITURE

Put equal parts of strong alcohol and good oil of turpentine into a bottle, then set the bottle into hot water until the mixture becomes thoroughly heated. Cover the woodwork with this hot liquid, and all the old varnish will dissolve so that it will scrape off without difficulty. In a little while the woodwork will be entirely clean and smooth. In rejuvenating old furniture a satisfactory job never can be done by putting on a new coat of varnish without first removing the old coat.

TO REMOVE STAINS FROM FURNITURE

White stains on furniture may be removed by rubbing them with hot milk and turpentine. They can be removed with kerosene when not of long standing, but the hot milk and turpentine is better. For dark stains use a strong solution of oxalic acid. Purchase the crystals, put them into a bottle, fill it up with water and keep it on a high shelf where the children cannot get at it. It is good to use in removing spots of iron rust or of ink from white goods, and a weak solution may be used on the hands when they are badly stained from dirty work. The hands must then be rinsed carefully and thoroughly, for oxalic acid is poison.

SAVING BROKEN FURNITURE

Many articles of furniture are broken up and destroyed because some parts of them needed mending and were neglected. Every piece that has become loosened from an article of furniture, or every part that is broken, should be saved. Bring them out some day when you have a little spare time and provide yourself with a hammer, small nails and a bottle of prepared glue. You will be surprised to find that many articles can be made to do good service, and look as well as new after they are repaired.

TO HARDEN LAMP CHIMNEYS

Here is a method which will prevent lamp chimneys from cracking by heat. The treatment will not only render lamp chimneys, tumblers and like articles more durable, but may be applied with advantage to crockery, stoneware, porcelain, etc. The chimneys, tumblers, etc., are put into a pot filled with cold water, to which some common table salt has been added. The water is well boiled

over a fire and then allowed to cool slowly. When the articles are taken out and washed they will be found to resist afterward any sudden changes of temperature.

PICTURES TRANSFERRED TO GLASS

To transfer drawings or engravings to a varnished surface of glass, wood or pottery, spread a thin coat of copal varnish evenly over the surface to be ornamented, and when nearly dried apply the engraving with its face to the varnish and carefully press it to exclude all air bubbles. When the varnish is dry the back of the paper should be moistened thoroughly with a sponge dipped in warm water, when it can be carefully rubbed off, leaving all the lines of the print upon the varnished surface.

SUBSTITUTE FOR GROUND GLASS WINDOWS

Put a piece of putty in muslin, twist the fabric tight and tie it into the shape of a pad; clean the glass well first and then apply the putty by dabbing it equally all over the glass. The putty will exude sufficiently through the muslin to render it opaque. Let it dry hard and then varnish. If a pattern is required, cut it on paper as a stencil plate, and fix it on the glass before applying the putty, then proceed as above; remove the stencil when finished. If there should be any objection to the existence of the clear spaces cover with slightly opaque varnish.

TO MAKE HOLES IN PLATE GLASS

It is not difficult to make a hole in plate glass. Make a circle of clay or cement rather smaller than the intended hole; pour some kerosene into the cell thus made, ignite it, place the plate upon a moderately hard support, and with a stick, rather smaller than the hole required, and a hammer, strike a rather smart blow. This will leave a rough-edged hole, which may be smoothed with a file. Cold water is said to answer even better than a blow.

TO MAKE HOLES IN HARD STEEL

Holes in hard steel may be made with nitric acid. To apply it cover the steel plate at the place where you wish the hole with a

thick layer of melted wax; when cold make a hole in the wax of the size you want the hole in the plate, then put on one or two drops of strong nitric acid, leave it on for some time, wash off with water, and if not eaten through apply other drops of the same liquid and continue this until the plate is perforated.

TO FASTEN IRON IN STONWORK

Melted sulphur is an excellent material with which to fasten iron rods in holes sunk in stonework. One objection is that sulphur is brittle and readily broken. It may become cracked by sudden changes of temperature. This may be avoided in a measure by mixing fine sand or iron-filings in the melted sulphur before pouring it in to hold the ironwork.

TO HARDEN STEEL

To harden steel, take two teaspoonfuls of water, one-half tablespoonful of flour and one of salt. Coat the steel with the paste by immersing it in the composition, after which heat it to a cherry red and plunge it into soft water. If properly done the steel will come out with a beautiful white surface. Stub's files are said to be hardened in this manner.

CLEANING TARNISHED BRASS

The method of cleaning brass used in the United States arsenals is as follows: Make a mixture of one part common nitric acid and one-half part sulphuric acid in a stone jar, having also ready a pail of fresh water and a box of sawdust. The articles to be treated are dipped into the acid, then thrown into the water, and finally rubbed with sawdust. This immediately changes them into a brilliant color. If the brass has become greasy it is first dipped into a strong solution of potash and soda in warm water. This cuts the grease so that the acid has power to act.

TO MAKE A BLACK FINISH ON BRASS

The process used on surveyors' and engineers' instruments to give brass a dark color is as follows: Clean the brass, and having dissolved in two pints of hydrochloric acid five ounces of arsenious acid and seven ounces of sulphate of iron, dip the brass in this liquid

until properly colored, then wash well in water and lacquer with a solution of bleached shellac in alcohol while the brass is quite warm.

MENDING PLASTER CASTS

Plaster casts may be mended by using a cement made by dissolving small portions of celluloid in ether. No more of the cement should be made than is required for use, as it hardens almost immediately by the evaporation of the ether.

HOW TO FILL CRACKS IN PLASTER

For filling cracks in plaster mix plaster of Paris with vinegar until it forms a paste of putty-like consistency, and push this into the cracks with an old case-knife. Plaster of Paris will not become hard for at least half an hour if mixed with vinegar, and it hardens almost immediately in water.

HOW TO MEND A PAPER PAIL

A paper pail or tub may be mended by pasting a piece of cloth over the hole with putty, and letting it harden.

TO CARE FOR AN UMBRELLA

The best way to dry an umbrella, and so preserve it, is to leave it spread on the piazza or in the hall. When there is not enough room to allow that, reverse the usual method and stand the umbrella in the corner with the handle down. The rain drips quicker off the points. The ordinary way collects all the water at one place, where the cloth dries slowly and, therefore, rots the quicker. Never put several wet umbrellas together in an umbrella stand.

TO REMOVE STAINS FROM MARBLE

To remove stains from marble, cover the soiled part with a paste of quicklime, moistened with water in which sal soda has been dissolved. Let this remain for several hours. Then wash the parts thoroughly and polish if necessary.

TO FILL CRACKS IN A WOODEN FLOOR

It is a most novel idea to save all the letters that come to the house and all envelopes and letter paper, even that used by the

children at school. A big bag might be kept hanging in a convenient place and the letter paper should be torn into bits and deposited therein. When a floor is to be painted, papier-maché is made with which to fill the cracks. The bits of paper are cooked in a pot and a handful of gum arabic added to every quart of the paper and water; then the mixture is allowed to simmer until it becomes a thick cream. This is put into the cracks in the floor while boiling hot, and when cold it is as hard as the flooring. When the floor is painted it is almost impossible to tell where the cracks were.

TO KEEP WASTE WATER PIPES CLEAN

Many waste pipes from the kitchen sink, the bath-tub or the wash basin fill up so gradually that we find them clogged before we dream of such a thing. Very often this means sending for the plumber and paying the bills, and perhaps having to wait for him to come. A plumber who has been called to look after many such cases gave this bit of instruction, though he frankly confessed that if he had not gone out of the business he would not tell the secret. He said: "Just before retiring at night pour into the clogged pipe enough liquid soda-lye to fill the trap (the bent part of the pipe, just below the outlet). During the night the lye will convert all the grease into soft soap, and in the morning a good flushing with warm water will leave the pipes as clean as new."

WATERPROOF CANVAS FOR TARPAULINS

To make waterproof canvas for wagon tops, hay covers, etc., take one pound litharge, one pound umber and nine and one-half gallons of linseed oil boiled together for twenty-four hours. For smaller quantities observe same proportions. This may be colored with any paint if desired and should be applied with a brush the same as paint.

TO CLEAN A DIRTY BARREL

To clean a barrel thoroughly, fill it half full of water, then pour in a solution of two pounds of sal soda in a gallon of hot water. Shake the barrel so that the liquids will mix thoroughly and then fill it to the top with clean water and allow it to remain over night. Empty out the liquid, rinse thoroughly, and after a few hours it will be ready to use for cider or any such purpose.

TO KEEP WOOD FROM SPLITTING

Logs and planks split at the ends when the rest of the piece is in good condition. This is because the exposed surface dries faster than the inside, and in shrinking cannot contract sufficiently. This may be prevented by mixing muriatic acid and lime, and applying it like whitewash to the ends of the logs. The chemical combination formed absorbs moisture from the air and so prevents the splitting.

BLACK HARNESS POLISH

A good harness polish easily made at home may be prepared as follows: Take one part of indigo or lamp black, two parts each of soft soap and mutton suet, and six parts each of beeswax and powdered sugar. If these parts be ounces you will have a little more than a pound of polish. Dissolve the soap in a quarter of a pint of water. Then add the other ingredients, and after melting and mixing them all together add a gill of turpentine. This may be put on the harness with a sponge and polished with a brush.

CLOTH MADE WATERPROOF

Cloth may be made waterproof by soaking in a tub of the following mixture: Dissolve ten ounces of sugar of lead in one bucket of water, and the same amount of powdered alum in another. Pour the two into one tub and let the cloth soak in it and then dry without wringing.

CLOTH MADE FIREPROOF

Cloth may be made virtually fireproof by the use of tungstate of soda. If the clothing is to be starched, starch it with a mixture of four parts starch and one part tungstate, ironing it as usual. For unstarched clothing dip the goods into a solution of one-half pound of tungstate in a gallon of soft water. Be sure to have the soaking complete, and, to be most effective, dry and dip a second time.

MAKING CURTAINS FIREPROOF

To render curtains and other like textile fabrics non-inflammable dip them into a solution of about twenty per cent strength of ammonia sulphate and dry them. The fabrics may be starched and ironed, or finished in the usual way.

CHAPTER VI

GENERAL HOUSEHOLD RECIPES

Value of System in Housecleaning—Beds and Their Care—Windows, Doors and Woodwork—Moths, Cockroaches and Other Insects—Carpet, Oil-cloth and Rug Suggestions—The Care of Wall Paper—Washday Wisdom—How to Wash Flannels without Shrinking Them—Successful Starching and Ironing—Removing Stains from Fabrics—The Care of Fine Laces—Practical Advice from Experienced Counselors.

There is no one so wise as to know everything about even the simplest subject of general interest. And when we come to something as varied in its conditions and as wide in its scope as the care of a household, true it is that in a multitude of counselors there is wisdom. Housekeeping is an honored and an honorable occupation. In its different forms it may be termed with truth a science, an art, a profession or a trade. Here in the succeeding pages have been gathered the results of years of experience of many housekeepers who take pride in their craft, and have learned the best, the simplest and the most effective ways of doing the thousand things that have to be done in every household in the course of the year.

VALUE OF SYSTEM IN HOUSECLEANING

No matter how neat the housekeeper is, nor how well she looks after every part of the house, a thorough cleaning is necessary every spring and fall, and she will do well to learn the best and easiest method of doing the work. System, method and planning will help her wonderfully.

The attic, closets, cupboards, trunks and drawers may be put in order before the general work begins. If there are any small holes in the plastering of the closets, mix a little plaster of Paris with enough water to make a stiff dough and press it into the cracks with a putty knife. Mix just what you will use at one time, for it will harden in a little while and is then worthless. All winter clothing can be stored away in boxes or bags for the summer. Wash the

floors and woodwork with a strong solution of borax and water to remove any moth eggs that have been deposited there and make the air of the closets pure and wholesome. This preparatory work can be done whenever you have a few leisure hours, and will be a great help when you begin the hard work.

Every Bed Should Be Taken Down and the slats and all inner portions thoroughly dusted and washed. If you have been troubled with bedbugs heretofore, mix one-half pint alcohol, one-half pint turpentine, and one ounce corrosive sublimate, and when the latter has dissolved pour a little of the mixture in a machine oil-can and apply it to the parts where the bugs are usually found. The corrosive sublimate is a deadly poison, and one must be careful that it is kept where the children cannot reach it. Strong alum water is also recommended for bedbugs, and is much safer to use, but not so effective.

Never Use Straw under Carpets as the dirt sifts through it and cannot be swept out, so accumulates from week to week. If papers are used, a great deal of dirt is removed in the daily sweeping. When the carpet and papers are taken up sprinkle the floor with moist earth and you can sweep it without raising much dust.

The Best Use for Matting that is almost worn out is to put it under a carpet. Matting is an excellent floor covering for summer. It is easily cleaned, wears well, and is cool. When you put down a new piece of matting give it two coats of varnish, which will make it more durable. When it becomes soiled warm a bucketful of water, dissolve a little borax in it and a very little soap. Dip a soft cloth in the water and wipe the matting with it, and it will look clean and fresh again. The borax makes it easy to clean and does not injure the colors or material.

Clean the Leather Seats of Chairs with a sponge dipped in the white of an egg. The appearance of old furniture is wonderfully improved by cleaning the woodwork with hot suds. Sandpaper any rough places, and apply a coat of good varnish. Clean gilded picture frames by rubbing them with a sponge wrung from alcohol.

AN EASY WAY TO CLEAN WINDOWS

Take powdered whiting and wet to a paste with alcohol; rub it over the glass and leave it to dry; then take a chamois skin and rub

it off. In this way there are no slops, no rags and no lint to fuss with, but with half the labor the result is bright, shining, lintless glass.

When You Wash Windows use a little borax or ammonia dissolved in warm water. After you have washed the windows, polish them with a dry chamois skin, which leaves no lint as a cloth does.

To Open Windows Easily, brush over the edge of the frames with ordinary black lead, when they will slide without difficulty.

PAINT SPOTS AND FINGER MARKS—TO REMOVE THEM

Remove paint spots from windows as follows: Dissolve one ounce of sal soda in one pint of soft water, and use it hot on the spots with a piece of flannel, sponge or stick, so as not to burn the fingers. Wash off with hot water as soon as the paint spots are softened.

The same mixture will clean finger marks and other soiled spots from doors or other painted woodwork.

TO RENEW FADED GREEN BLINDS

Faded green blinds, if not too far gone, may be made to look almost as good as new by brushing a little linseed oil over them. After this they have a fine appearance.

CLEANING MARBLE

Ink Spots May Be Removed from Marble by first washing with pure water and then with a weak solution of oxalic acid. If the luster of the stone becomes dimmed by this acid it may be restored by rubbing it with a linen cloth, dipped alternately in water and in very finely powdered soft white marble.

Match Stains May Be Removed from Marble by sulphide of carbon.

TO CLEAN OIL PAINTINGS

Varnish and dirt may be removed from an oil painting by washing over it with a weak solution of carbonate of ammonia, wiping it off with a soft sponge and a little warm water as soon as the dirt is cleared away. If allowed to remain too long it will injure the oil colors. Afterward apply a little nut oil (warmed), rub the picture gently with it and let it dry. This will make it look as bright as when it came from the artist. If the canvas is injured by damp, mildew or

decay, the first thing to be done is to stretch it gently and line it with new canvas.

TO CLEAN SPOTTED OR OLD BOOKS

Ink Stains or Writing May Be Taken out of Books by various acids, but it is important to select one that does not injure the paper at the same time. Muriatic acid, diluted in five or six times its own quantity of water, may be applied to the ink spot with a soft camel's hair brush, and after a minute or two if washed off with clean water it will take the ink stains with it. A solution of oxalic acid, citric acid and tartaric acid in equal parts, well diluted with water, may be used on books without risk of injury to either paper or print. These acids take out writing ink but do not affect the printing ink.

To Remove Yellow Stains from Old Books and engravings which have become "foxed," as the technicality has it, apply a solution of hydrochloride of soda.

CARE OF THE ICE CHEST

Keep the ice chest clean by washing with soda. Do not let the waste pipe clog, and never connect it with the drainage of the house, or the worst results may ensue. Keep the butter and milk in a separate compartment.

Refrigerators need careful attention in winter, that they may be in proper condition for summer use. Scrub and scald them at intervals and keep pieces of fresh charcoal in each compartment.

COAL OIL FOR CLEANSING

A small amount of coal oil will cleanse the wringer nicely, and also the wash basin.

TO CLEAN PAINTED WOODWORK

You will doubtless have painted woodwork to clean during the spring housecleaning. Dissolve a teaspoonful of borax in a gallon of warm water, shave a little good soap fine and put it in. Dip a soft rag in the suds, wash the paint quickly and wipe dry. The borax cleanses the paint without injuring it in the least, which cannot be said of many preparations that are sold for that purpose.

TO CLEAR OUT COCKROACHES

Sprinkle borax the last thing at night in the places where cockroaches and water-bugs are troublesome, stuffing it into the cracks where they hide. Repeat this two or three nights in succession and you will find the pests leaving your home.

HOT ALUM WATER FOR INSECTS

Hot alum water will destroy ants, cockroaches and all bugs which infest houses.

TO CLEAN CARPETS ON THE FLOOR

While carpets, of course, must be taken up regularly for thorough cleaning and to clean the floors under them, you can get very good results in another way between times. Put a tablespoonful of ammonia in a gallon of moderately warm water and go all over the carpet with a sponge or soft broom, dipped in the mixture. You will be surprised to see what an improvement you will make by a little labor and expense.

MOTHS, AND HOW TO FIGHT THEM

Moths Are Hard to Drive Out when once they have begun to infest a house, either in closets or carpets, but they can be prevented and they can be exterminated. Before putting the carpet down take a can of turpentine and wet the floor around the edge of the room with a paint brush, quite freely. It kills the moths and the eggs that may be under the edge of the baseboard.

Damp Salt Sprinkled over the Carpet while sweeping is hard on the moths, and in addition it makes for cleanliness, brightens the carpet and keeps down the dust.

Moths May Be Destroyed in Carpets where they have already got a hold. Lay a coarse towel which has been wrung out of clear water over the place where they are suspected, then take a large and unbroken piece of thick wrapping paper and lay it over the wet towel. Then iron with a hot iron. If thoroughly done the heat and steam kill the moths and their eggs. This may be repeated at intervals for additional safety. It does not injure the carpet and does not require much pressure, for it is the heat and steam that do the work.

Benzine Is Considered Absolutely Fatal to Moths and their eggs and it may be sprinkled on upholstered furniture where they have made their way. If this is done, however, it must be remembered that the vapor is inflammable, and no fire nor lamp must be about until it is entirely evaporated and the room has been ventilated.

HOW TO TAKE INK STAINS OUT OF CARPET

If you are so unfortunate as to spill ink on the carpet, take up as much as you can with a sponge. Of course this is done before it has time to dry. Wash the place with a cloth dipped in clear water.

OILCLOTH AND RUG SUGGESTIONS

When a heavy floor oilcloth becomes so worn that it looks too shabby for longer use right side up, turn it over and give it a coat of paint followed by one of varnish, and then use it to cover a pantry or hallway floor. It will look better and be far easier cleaned than the ordinary wood floor.

Another place to use it is as a border around the edge of a room where a rug is to be used in the center. The rug is the ideal, as well as the fashionable floor covering.

These floor oilcloths nearly always have a brown back, and a color can be put on them which will closely resemble walnut wood and make a very handsome floor border which will last for many years.

Comparatively few housekeepers seem to know what a labor-saving article oilcloth is when properly used. It is well to put oilcloth around the corner where the kitchen table stands, like a wainscoting. Let it reach from the baseboard to a moulding placed about four feet above. No matter what gets spattered on the wall it is easily wiped off and looks fresh and clean. Then in the pantry, where pans and all sorts of things hang against the wall, it saves the dingy-looking streaks which will come even on the plaster which has been painted.

Some of the marbled oilcloths are pretty enough to add to the beauty of a kitchen or bathroom if used as a wainscoting for the entire room, and only those who have tried it know how much it saves in the way of work.

RUGS MADE FROM OLD INGRAIN CARPETS

Ingrain carpet, which is too badly worn for any further use, can be used as material for a rug which will last for a lifetime and be handsome enough for use in any room. It is not a cheap rug in any sense, for it costs as much to get it woven as an ordinary rug costs, but it is far better when done than any new rug which costs the same sum. A rug three yards square costs \$9 for the weaving, but no \$9 rug is to be compared with it either for beauty of texture or durability. The weaver takes the carpet as it comes from the floor and returns the rug ready to put in its place.

DOUBLE SERVICE FOR STAIR CARPETS

If a new stair carpet is to be bought this spring, be sure that the amount bought is a little more than the exact length actually needed; then let the extra length go under the carpet on either the upper or lower floor. When the carpet is taken up to clean reverse the order, and the part of the carpet that came on top of the steps and got the wear will be moved forward and come between the steps. In this way the term of service in which the carpet will look fresh and good is doubled, and the price of a new carpet saved to be used in some other place or way.

HOW TO CLEAN STRAW MATTING

Cleaning straw matting with bran water gives very fine results. Boil three pints of bran in two quarts of water, then, when it becomes cold, use it to wash the matting. This is best done on a sunshiny day and out of doors, then the matting need not be disturbed until perfectly dry.

TO PRESERVE AND FRESHEN OILCLOTH

Cut half an ounce of beeswax into bits, put it into a saucer, cover it with turpentine and place it in the oven, where it remains until the wax is melted. Wash the oilcloth with warm milk and water, using a flannel cloth, and then go over it with flannel dipped into the preparation of wax and turpentine, and rub it well with a dry cloth. This gives a nice polish and forms a coating over the oilcloth that tends to preserve it. The beeswax should be applied every time the oilcloth is washed, but this need not be so frequently under this treatment as

without it. Usually we wash oilcloth when it really does not need it, simply because it looks dull and dirty. The wax and turpentine produces a polish that lasts quite a long time, and the oilcloth looks clean. Sweep oilcloth with an old woolen cloth tied on the broom, and this cleans it nicely.

To Keep Your Linoleum Bright, wash it regularly every two or three weeks with a mixture of equal parts of milk and water. After three or four months the linoleum should be rubbed with a weak solution of yellow wax turpentine. Thus treated it is said to keep well, and look as bright as when new.

TO MAKE OILCLOTH WEAR WELL

It is said that if sawdust is spread evenly over the floor before a new oilcloth is laid the durability of the latter will be increased and sound deadened as well. Most old housekeepers know it to be a good plan to lay a new oilcloth right over an old one unless there are seriously uneven holes and lumps in the old one.

HOW TO PAPER A ROOM

It is not difficult to paper the walls of a house yourself if you will take pains when you are doing the work. Trim the edge of the paper carefully, and be sure to match the pattern so it will join properly as you cut off the lengths from the roll. The paste should be made the day before it is wanted, so it will be cold when time to use it. A gallon will be enough for a room twelve feet square. Mix one pound of flour into a thin dough, mixing it with more water and pressing out all the lumps. Then pour this thin batter into a gallon of boiling water and keep stirring while it comes to a boil again. Let it stand to cool over night, and then if there are lumps in it press it through cheese-cloth to strain it.

Whitewashed Walls Should Be Sized with a mixture of one pound of alum to two gallons of water. Let the walls dry before beginning to paper. It is unsafe to attempt papering over walls already papered. You must scrape off the old paper and start fresh or you will find your work an entire failure. When you are papering have a towel over your arm and press out from under the paper all the air bubbles or puffs, so there will be no wrinkles when it is dry.

WALL PAPER CLEANED WITH BREAD

Wall paper may be cleaned so as to look almost like new by rubbing it with bread about two days old. Brush the dust off the paper with a feather duster, or blow it off with a strong bellows. Then take a smooth piece of the loaf, which has been cut into eight portions. Begin at the top of the room, holding the crust in the hand and wiping the length of your arm till the upper part of the room is cleaned all around. Then clean the second circuit with a similar sweeping stroke downward, and continue until you reach the floor. Do not rub the paper too hard nor attempt cleaning it by stroking crosswise or horizontally. The dirty part of the bread must be continually cut away.

GREASE SPOTS TAKEN FROM WALL PAPER

Grease spots and marks where people have rested their hands or their heads can be taken from wall paper by mixing pipe clay or powdered chalk with water to the consistency of cream, laying it on the spot and letting it dry till the following day, when it may be brushed away, taking the grease with it.

TO MAKE BROOMS LAST LONGER

The amount expended for brooms during the year is a considerable one, and yet very few housewives take any care of them. The small broom holders that are fastened to the door casing are convenient places for keeping them, or if you do not have these, fasten a large screw-eye in the end of the handle and hang it up on a nail. After the weekly sweeping is done prepare a hot suds and let the broom soak in it two or three minutes, then rinse in clear, hot water, and hang it up to dry. This treatment makes the straws tough and pliable, greatly lengthening their durability.

USE FOR A CHICKEN WING

A good soft chicken wing is just the thing for brushing down stairs; it finds all the corners and leaves no scratches.

THE BEST POLISHING CLOTH

Take old pieces of cotton or linen too much worn for further use, put them in a saucepan and pour over a quart of milk to which two

ounces of powdered borax and one of ammonia are added; set over the fire and let boil fifteen or twenty minutes. Take up, rinsing quickly in cold water, and dry before the fire or in a close room. Fold these cloths away in a drawer or box, and use to polish silverware, tin or bronze. The combination of milk, ammonia and borax will produce a brilliant polish and make old ware rubbed with it as bright as if new.

HOW TO POLISH TARNISHED BRASS

Tarnished brass may be greatly benefited if rubbed with a cut lemon dipped in salt. It should afterward be washed in warm water, dried, and polished with leather.

TO POLISH GLASS

For polishing glass nicely use three tablespoonfuls of kerosene in a pint of water. Put kerosene oil in the water when washing mirrors and windows and then polish with newspaper.

TO REMOVE FINGER MARKS FROM PAINT

Chalk may be used to remove finger marks from paint. Sprinkle the chalk on a flannel cloth, rub the spot briskly for a minute or two and it is gone.

A HANDY STOVE POLISHER

For polishing the stove after blacking use a piece of sheepskin with the wool on, fastened on the front of a mitten. It saves the hand and puts a good polish on the stove.

HOW TO POLISH THE STEEL TRIMMINGS ON STOVES

Fine emery powder and oil is the nicest thing in the world for cleaning the steel on the range or heating stove. It should be applied with a soft rag, and rubbed in well, then rubbed again with chamois skin or other soft leather. Save all your worn gloves for such purposes.

A PRACTICAL STOVE POLISH

When putting away stoves and cleaning up the grates for summer, get a pint of asphaltum and mix it thoroughly with a gill of turpentine and apply it to the iron with a paint brush. The result will be a

shining surface that will look like new, and will last as long as the finish that was on the iron when bought. This is a fine blacking for stoves in use as well as when idle, and is particularly fine for pipes or any exposed iron surface.

GLASS BOTTLES MADE CLEAN

A Good Way to Clean Glass Bottles that have had medicines in them is to put ashes in them, put them in cold water and heat the water gradually till it boils. After boiling them an hour let them remain until it is cold. Wash them in soap suds and rinse them till clean in clear water.

To Clean Bottles with Small Necks, chop up a potato very fine, put it in the bottle with some warm water and shake it rapidly until clean. Some rice and warm water put in a bottle will serve just as well, and either of these plans is better than to use shot, which may break the bottle or leave a coating of lead inside.

WASHING FLANNELS WITHOUT SHRINKING THEM

As one wash is sufficient to ruin flannels, unless the work is done in a proper manner, particular attention should be given their first bath. If this is successful they will not be apt to shrink so much later on. The secret of washing flannels is to have the changes of water of the same temperature and never to rub soap or anything directly on the garment. The temperature should be kept the same throughout the entire process, as sudden changes from hot to cold will shrink any woolen fabric. Flannels should have a clean suds prepared especially for them, and should be well shaken before being submerged in water to free them from lint and dust, and the water must be warm but not boiling, as it shrinks flannel to scald it. Into a quarter of a tubful of lukewarm water stir two tablespoonfuls of some good washing powder, and stir to a strong lather in the water before the flannel is put in. Lay the flannels in the suds and cleanse by lifting up and down and rubbing with the hands. From this water lay them in a second prepared exactly like the first and of the same temperature. Rinse well in this and lay them in clear, warm water. Wring through clothes wringer, pull and shake well and dry in warm temperature. While drying shake, stretch and turn them several times, and they will keep soft without shrinking.

If it can be done, press before perfectly dry, but after they are dry a damp cloth should be placed between the iron and the garment. It is said that a handful of flour boiled in a quart of water and mixed with the warm suds in which red flannels are washed will set the colors and keep them from running. Blankets are washed in the same way, only, of course, they are not ironed, but look better if they are folded smoothly when thoroughly dry and placed under a heavy weight for several days. The same process, using a lighter suds, will restore almost any woolen gown, white or colored. Flannel waists may be washed without ripping, though they are easier ironed if the gathered portions are ripped out and sewed in place again after ironing. All work of this kind must be done rapidly, for the chief point in washing flannels is not to let them lie in the water a moment longer than necessary.

Washing Flannels—Another Recipe.—Have a tub half full of water that is more than warm, but not very hot, and make a strong suds with laundry soap of the best quality. Add a tablespoonful of powdered borax. Shake the flannels thoroughly, then squeeze them with the hands, sop them up and down, and if necessary rub the spots between the hands. Do not rub soap on the flannels on a board. Wring from the first suds and put into another of the same temperature; rinse through water that does not contain soap; wring dry, shake vigorously and dry quickly. Iron before they are quite dry with a moderately hot iron, then press well. Do not use borax for colored flannels.

WOOLEN GOODS—TO SHRINK PROPERLY

“The old-fashioned way of shrinking woolen cloth,” says a skilled tailor, “was to wet it with a sponge, not dripping wet, yet wet enough to moisten the goods well, rub thoroughly, fold and lay away for two hours, after which the cloth was hung up to dry. That method is all right, but I prefer the one I now always employ. I take a cloth just half the size of the one I desire to shrink and wet it thoroughly; I place this over the woolen piece, folding the wet cloth up in it and lay away for two hours, during which the moisture will spread to every fiber. Then I unfold and separate the cloths and spread the woolen piece out to dry.

“One thing all housekeepers do not know is that flannels never

should be washed in either hot or cold water. Tepid water is the thing to use invariably—it comes the nearest to the temperature of the wool when it is on the sheep's back. I use water at about 100 degrees, and find it is the best for the preservation of the size of flannels—although flannels will continue to shrink until they all but disappear."

BLEACHING FLANNELS WITH SULPHUR

To bleach flannels wet them and hang them on a stick over the top of a barrel. In the bottom of the barrel put an old pan with some burning coals in it and sprinkle on the coals some broken pieces of brimstone. Cover the whole thing with a piece of carpet or an old comfort to retain the smoke.

The Fumes of a Lighted Match of the old-fashioned sulphur variety will bleach out the remnants of stains in many instances.

HOW TO WASH THE BABY'S UNDERWEAR

The baby's underwear should be of flannel, as soft and fine as the purse can buy, and kept in the best possible condition by washing it properly. A careless laundress can ruin the best woolen garments in two or three washings, making them so shrunken and rough that they irritate the tender flesh almost beyond endurance. The following method has been used for years with unvarying success, the little garments retaining their soft, fleecy look until entirely worn out.

Use water that is as hot as you can bear your hand in comfortably, for flannel cannot be boiled, and hot water cleanses and purifies it. Dissolve a little borax in it and add enough soap to make a strong suds; wash the flannel through two waters prepared in this way—plunging up and down and rubbing gently between the hands. Soap should never be rubbed upon flannels, and rough usage thickens the texture. Rinse through clean water of the same temperature as that used for washing, and pass them through a rubber wringer. Then, just before hanging them out, pull and stretch every piece in shape, for if this is neglected the tiny wool fibers interlace, causing them to become hard and shrunken. Place them smoothly on the line in the sunshine where a gentle breeze will blow through them. Every part of the work should be done as speedily as possible.



Courtesy of the Breder's Gazette

HOME ECONOMICS—MINNESOTA SCHOOL OF AGRICULTURE.

All kinds of names are given to the scientific training of young women in household duties—Domestic Economy, Domestic Science, Home Economics, etc., etc., but the aim is always the same, the making of useful daughters and wives competent either to do the actual work in a household or to manage an establishment. By thus understanding the whys and wherefores of domestic operations the housekeeper ceases to be the mere drudge.



A KINDERGARTEN SCHOOL CLASS.

Blocks are used in the kindergarten class for a variety of purposes. They teach the children to count, and from them are learned various forms and properties of objects. The difference between squares, cubes and cylinders is learned, as well as that between the various angles. The little ones thus get both instruction and amusement from the trained use of eyes and hands.

FLANNELS AND HOW TO IRON THEM

Most flannels are the better for not being ironed, but in some cases it is necessary to do so. Spread them on an ironing-board, cover with a slightly damped cloth and iron over this, pressing down heavily. The iron must not be too hot.

HOW TO WASH TOWELS EASILY

It is well to keep on hand a strong emulsion of soap and kerosene for the purpose of washing towels. A certain amount is put into a large pan containing cold water and set on the stove. The towels are then put in and stirred about occasionally until they have boiled several minutes, then they are rinsed in two waters and spread on the grass.

AVOID THE ROLLER TOWEL

It is never a good plan to buy fringed table linen or towels for everyday use. Purchase good crash toweling by the bolt and cut it into yard lengths, hemming each end and fastening on a loop of braided cord to slip over the nail provided for the towel. It is not well for all the household to use the same towel, for it is now well known that diseases may be communicated in that way. It is really quite as easy to wash half a dozen small towels as one long roller towel, and it is not necessary that they should be ironed.

BE SURE TO DRY YOUR TOWELS

Towels should be dried thoroughly before being put away. If consigned to the linen closet after being ironed, before they are thoroughly aired, a mould called oidium forms on them, giving rise to a parasite which is liable to produce skin diseases.

TO DO YOUR STARCHING SUCCESSFULLY

"More starching is a failure from the starch being half cooked than from any other cause," said a capable housewife who was complimented on the perfection of the starched goods that came up from her laundry. "I make it a rule to have the starch boiled steadily an hour before it is strained. After this some of it is thinned to the proper condition for dresses, shirt waists and other pieces that require light starching."

Starch that is not boiled enough will stick to the iron. If starch is not strained there will be uneven places in it. It is very little trouble to boil starch. It needs to be stirred a few times after it begins to boil. Stretch a triangular bag across a pail and pour the starch through it. It will nearly all soon drip through, and it requires very little squeezing to press the remainder through. There is always some starch left in the strainer that cannot be used. It saves time to skim off the film that gathers over starch that has been boiled for a considerable length of time.

TO MAKE WHITE SKIRTS STIFF

If you have difficulty in getting white skirts stiff or to have "that rustle," the following is very effective: Starch the skirt, partly dry it, bring it in and restarch and dry quickly; if damped and ironed the same day it will suit the most fastidious.

MAKING LACES CRISP AND GLOSSY

When washing laces put a little sugar into the rinsing water—never starch—and your laces will be crisp and glossy.

SOME WISE SUGGESTIONS ABOUT IRONING

"Not being a strong woman I have to economize my work to make it lighter," writes a South Dakota farmer's wife. "When I take my clean clothes in from the line I do the most of my ironing in this manner. The sheets I first fold lengthwise, then double in the middle, then the longest way again. Pillow cases are folded lengthwise, taking pains to fold them smoothly, and pressing with the hands. Flannel underwear and everything that is not starched is folded and pressed in like manner. If the clothes are a little damp it is all the better. I then hang them on a line where there is a fire and let dry thoroughly, then put away after mending. The starched ones are sprinkled and ironed after the usual manner. If a little sugar or salt and a lump of butter are added to the starch it irons easily and gives the clothes a nice luster. Water, cleansed with concentrated lye, makes white clothing beautifully white and wash easily. When I go down cellar I get everything that is needed to save steps. I sit down to peel potatoes and other vegetables. By economizing in this way it helps to accomplish a good day's work."

TO MAKE IRONING EASIER

Ironing is a tiresome task, but if you will take a small piece of beeswax (5 cents' worth should last you a year), tie up in a small white cloth and rub over the irons just before beginning to iron, then wipe them off on a clean cloth, they will slip over the clothes like magic and there will be no sticking on the starched pieces.

Another Suggestion.—If your irons are rough put a little salt on paper and rub them upon it. This will prevent their sticking to anything that is starched and make them smooth.

A HANDY SPRINKLER

Try a clean and rather fine whisk-broom for sprinkling clothes to iron, also for giving house plants a shower bath.

HOW TO DO UP LACE CURTAINS

Curtains should be taken down and laundered as soon as they show soil, as this saves the curtains as well as preserves that fresh appearance which gives such an air of cleanliness to a room. If they are allowed to hang too long without cleaning they may be transformed from beautifiers into dust repositories. Lace curtains are often made to do duty for one more season because of the dread of laundering, when the work may be very easily done at home where it is not convenient to send them to the laundry, thus saving the no inconsiderable expense of professional cleaning. Lace or muslin curtains should never be rubbed on the washboard, nor should they be put in with the general wash. It is a kind of work that is worth doing well if worth doing at all.

The curtains should be taken outdoors and shaken until no more loose dust will shake off them, then put them into warm water and let them remain over night. The next morning prepare a tubful of hot water and add enough pearline to make a strong suds; immerse them in this suds for an hour; then put them into fresh, cleaned suds, prepared in the same manner, each time squeezing the lace and rubbing and shaking them gently with the hands. Keep on renewing the suds and rubbing till the water is no longer dark; then rinse in clear, soft water. If the curtains are white the second rinse water may be made blue, as for clothes. If a cream color or ecru tint is

preferred strong coffee should be added to the water; then dip them in thin, boiled starch slightly tinged with blue or brown as desired.

As curtain stretchers are somewhat expensive they are purchased by comparatively few housekeepers who live in the country, but their curtains may be made to look quite as nice without them by pinning them to sheets which are tacked to the floor of some unused or spare room. If the curtains are alike it is easier to place the two corners together and stretch and pull them until they are perfectly straight, then pin each scallop to the sheet after carefully shaping it with the fingers. If the work is properly done they will not need ironing, and will have the appearance of new curtains. And last, but not least, when you come to replace them on the poles they should be draped in such a way as to have a pleasing effect, and not with mathematical precision, as they look better if arranged rather carelessly and not with such painstaking labor.

LACE CURTAINS WINTER AND SUMMER

As most housekeepers take down lace curtains for the winter it is well to know how to care for them. They should never be put away soiled. To wash lace, madras, or other light curtains or drapery, take them down, shake and brush the dust from them, put in a clean tub and cover with hot water, to which a little powdered borax has been added; let stand four or five hours, rinse well, squeeze and wring lightly; hang over the line until dry; take down, fold and lay in a box or drawer.

When ready to be hung in the spring, select a bright, sunny day, wash the curtains through borax water to which a little starch is added, shake and squeeze them free of water. Spread clean sheets over the carpet in a spare room and fasten them securely. Pull the curtains free of wrinkles, place over the sheets smoothly, pin the corners and sides and let dry. When ready to put up unfasten, and the curtains will be found as well laundered as if the work had been done by a professional launderer.

FINE LACE—HOW TO CLEAN AND KEEP IT

It is hazardous to fold fine cobweb lace, and the reason so many people have trouble with their laces dropping to pieces is because they do not understand how to care for it.

The best way to keep it fresh is to drop it carelessly into a satin-lined box and allow it to remain in the position you place it. Do not finger it or move it about.

Laces That Are Seldom Used or worn should be rolled upon strips of dark blue paper. This keeps the lace firm without creasing it.

To Clean Laces that are slightly soiled powdered magnesia is effective. Sprinkle some magnesia upon a smooth sheet of writing paper; lay the lace upon the paper and sprinkle more magnesia over it; cover with another sheet of paper and place a book or some light weight upon the paper, letting it rest for several days. Then take it up and brush the powder out. It will be cleaned nicely.

When Lace Needs Washing it should be rolled tightly around a glass bottle and fastened securely. Make a suds of warm water and pearline and let the lace-covered bottle soak in this for several hours. Make fresh suds and repeat the process, patting the lace often with the fingers. Rinse in several waters and then dry the lace on the bottle with a soft towel. A little gum arabic dissolved in the last rinsing water will add to the stiffness of the dainty fabric. There are many ways, but for washing soiled lace the above is the best and safest.

TO CLEAN DELICATE FABRICS

To Remove Mildew from White Cloth stir one ounce of chloride of lime in a quart of cold water. After it has settled two or three hours pour the clear liquid off into a bottle, and it will be ready for use. Dip the mildewed spots in the liquid and let it dry. If one application does not remove the stain repeat the process. Rinse thoroughly in clear water.

To Cleanse Grease from Wool or Silk, apply a fluid made by dissolving two ounces of white soap and one-half ounce of borax in a quart of warm soft water. Pour a small quantity into a bowl, add the same amount of water and sponge the goods with it. After it is clean sponge with clear water and hang it up to dry.

Paint May Be Removed by washing the spots in turpentine. If the cloth is too heavy to be washed put two parts ammonia and one part turpentine in a bottle and shake well. Apply this until the paint is softened, and it can be scraped off.

Lace Should Never Be Rubbed Hard, for this will break the deli-

cate threads and destroy its beauty. Fill a large-mouthed bottle half full of water in which a little borax has been dissolved. Dip the lace in water and after rubbing soap on it, put it in the bottle and set it on the back of the stove or some other place where it will keep warm. Allow it to soak ten or twelve hours, shake it for a few minutes and pour it into a basin. Dip it up and down in the water, then squeeze it out (do not wring it), and rinse through two waters, adding a little boiled starch to the second. Press it while it is wet upon a clean marble slab to dry, placing each scallop straight and smooth. The borax cleanses the fabric without rotting or injuring it in any way.

HOW TO DO UP DELICATE FABRICS

Here is a good way to do up small pieces of fine lace, lace handkerchiefs or any small, flat, fine article:

After carefully washing, scalding and rinsing, wipe carefully a large pane of glass in a window where the sun shines, and without squeezing or wringing the articles out of the last rinsing water, lay them against the window glass as you would lay a strip of pasted paper against the wall; carefully rub and smooth out every wrinkle and leave to dry and bleach.

No ironing will be necessary, and articles thus treated will have a newer, fresher appearance than when ironed.

SOME TRICKS FOR WASHDAY

A Little Piece of Beeswax sewed inside a piece of cloth and used to rub the flatiron will make it perfectly smooth.

A Little Sperm Candle in your starch will keep it from sticking.

It Pays to Buy Your Soap, both toilet and laundry soap, by the box and dry it yourself, as it will go nearly as far again.

Buy Your Bluing in Powder Form and mix it yourself. It is just as good and much cheaper.

SCRAPS OF TOILET SOAP AND HOW TO USE THEM

It is often a subject thought seriously of, what is best to do with the scraps of toilet soap, kept by a careful housekeeper who feels that she must count the cost and study ways and means. Here is an excellent recipe which serves a housewife's interest in many ways:

First, take a tin can and drop the small broken pieces of soap into

it until you get it nearly full; then dissolve three ounces of borax in two quarts of warm water, and stir all together in the can until melted. When cool it will form a jelly. A tablespoonful of this will make a strong lather in a gallon of water. If you haven't the scraps of soap, get two bars of good white soap and shave it fine and stir all together as above. But it is true economy to save the scraps of soap to use this way, as it cleans beautifully. It is good for washing matting and floor oilcloth, and it cleans nicely, without fading, the most delicate colors.

When you wash your windows dissolve a little of this soap in the water and it cleans quickly; then polish with a chamois or newspaper. Where one has much housecleaning to do, this soap will answer every purpose.

SPOTS ON CLOTHING—HOW TO REMOVE THEM

Spots of Paint, Pitch, Oil or Grease may be removed from silk or linen by rubbing with purified benzine applied with a cloth or sponge. To destroy the unpleasant odor of benzine add a little oil of lemon.

Fruit Stains May Be Removed from Clothing by pouring boiling water through them.

Remove Ink Spots from Clothing with sour milk, and afterward rub a piece of lemon on which some salt has been sprinkled, upon the spot.

Printers' Ink May Be Taken from Clothing by soaking it with turpentine for two or three hours, and then rubbing and brushing it thoroughly.

Remove Tar Spots by putting butter upon them, and then wash out the grease spot with soap and water.

GREASE SPOTS REMOVED

A simple method of removing grease spots from silk and woolen goods is to saturate carbonate of magnesia with benzole and spread it upon the grease spot to about one-third of an inch in thickness. Put a sheet of paper over the cloth and press the spot with a moderately warm flatiron. The heat of the iron passes through and softens the grease, which is then taken up by the magnesia. After an hour take away the flatiron, brush off the magnesia dust and the spot will be gone. Soapstone dust or powdered chalk may be used in the same manner and will answer nearly as well.

REMOVING FRUIT STAINS FROM LINEN

Fruit stains may be removed from linen by rubbing the spots on each side with soap, then laying a smooth, thick paste of starch and water on them. Rub it in well, and lay the linen in the sunshine until dry. Repeat the process until every trace of the stain disappears.

TO TAKE INK OUT OF WHITE LINEN

Dip the spotted parts immediately in pure melted tallow, then wash out the tallow and the ink will have disappeared.

IRON-RUST—HOW TO REMOVE

Oxalic Acid Will Remove Iron-rust from clothing. Half a teaspoonful of the acid in three tablespoonfuls of hot water makes a proper mixture with which to wash out the spots. It will bleach out the rust, and if washed afterward with clean water will not hurt the goods.

Another Method.—The spotted part may be tied up with a little cream of tartar put into cold water and boiled, when the rust spots will come out. Lemon juice and salt are also good for the same purpose.

Stains of Iron-rust May Be Removed from linen or cotton thus: Wash the cloth through one suds and rinse. When wet rub ripe tomato juice on the spot. Expose it in the sunshine until nearly dry and wash in another suds.

TO RESTORE THE FINISH TO OLD GOODS

The fine glossy finish that comes on certain grades of new woolen goods must sometimes be restored to make an article look well. Thus if a stain is made on the goods the gloss is removed when the stain is washed out. This leaves a dull spot on the goods, spoiling the general effect of the whole piece. To restore the original glossy finish the cloth should be laid on the table or other smooth surface and carefully brushed with weak gum water. Dip a clean toothbrush in the water and lay the gum water on carefully and evenly. Then place a sheet of clean white paper over it, and either press it with a lukewarm iron or put a weight on the paper and leave

it there until dry. When the cloth is dry the dull spot will have disappeared, and if the operation has been performed successfully there will be no break in the glossy finish apparent to the eye.

To Obtain the Rich Glossy Effect on Linen, it is advisable when washing to put a little gum arabic in the starch. Dissolve half a teaspoonful of the gum arabic in boiling water, and when cool add to the starch. Linen when starched with this mixture will have a beautiful gloss. It is the only method by which the same exquisite finish can be obtained on linen goods as when first displayed for sale in the store windows.

TO MAKE OLD BLACK CASHMERE LOOK NEW

Soak the goods in strong soft-soap suds two hours; then, having dissolved one ounce of extract of logwood (which is the amount required for one dress) in a bowl of warm water, add warm (not hot) water to cover the goods, which should be taken from the suds without wringing. Allow the goods to stand in the logwood water over night; in the morning rinse in several waters without wringing; to the last water add one pint of sweet milk, which stiffens the goods a little; iron while quite damp. That is all there is to it, and the dress speaks for itself.

Black Cashmere—Another Recipe.—To clean black cashmere wash it in hot suds in which a little borax has been dissolved. Rinse in bluing water—very blue—and iron while damp. If carefully done the material will look equal to new.

TO RESTORE COLOR TO FADED RIBBONS

By adding a little pearlash to soap lather, faded ribbons placed therein will be restored to their natural color. Faded breadths of silk can be restored if treated to a bath of this kind.

TO REMOVE STAINS FROM WHITE CLOTH

White clothing that has been discolored from red calico, or from streaks that are often found on napkins or towels, which by mistake have been washed with the white goods, may be renovated by soaking a few days in buttermilk. Cloth that has turned yellow from long standing also may be whitened in the same manner.

WASHING COTTON GOODS WITHOUT FADING

Two cups of salt dissolved in ten quarts of cold water is the proper mixture in which to dip cotton goods before washing them. Goods of black and white, slate color, brown or their shades, may then be washed with safety, for the salt sets the colors. After they have been dipped in the solution hang them in a shady place to dry and afterward wash them in the usual way. Calicoes and muslins do not require hot suds, and should never be allowed to soak long in the water. Wash quickly, turn the wrong side out, dry in the shade, and always iron on the wrong side with a moderately hot iron.

Very Delicate Cotton or Colored Things of any description, silk or flax embroideries and the like, should be put in bran water with soap jelly and no soap powder or soda; then rinsed in salt and water. To make the bran water, tie up a quart of bran in a muslin bag, boil it and let the water cool until it is almost tepid. Wash the articles thoroughly and quickly, rinse in cold, salt water, adding a little vinegar if the colors want reviving. Pass through the wringer, hang in the shade, and iron on the wrong side before quite dry. This treatment is correct for cretonne also.

CLEANING MUD STAINS FROM DRESSES

Mud stains on a black dress may be removed by rubbing them with the cut surface of a raw potato.

TO CLEAN A DIRTY MACKINTOSH

Spread the mackintosh flat on a table and scrub it with a nail brush, using cold water and yellow soap. When all dirt is removed dip the cloak in several lots of clean, cold water, but do not wring it out. Shake well and hang it up in the open air if possible to dry. Failing this, let it hang in a cool room, but on no account put it near the fire. Hot water must never be used, and if there are any bad stains or grease marks which will not yield to the soap alone, rub a little turpentine on them.

TO BRIGHTEN FADED PLUSH

Faded plush may be brightened by brushing it very lightly with a sponge dipped in chloroform.

TO RESTORE COLOR DESTROYED BY ACID

When color on a fabric has been accidentally or otherwise destroyed by acid, ammonia is applied to neutralize the same, after which an application of chloroform will, in almost all cases, restore the original color. The application of ammonia is common, but that of chloroform is but little known.

CLEANING KID GLOVES

Kid gloves may be nicely cleaned if you will take the pains and have patience until you learn the system thoroughly. The material to use is gasoline or purified benzine, which is not quite so odorous. Both are highly inflammable, however, and the vapor arising from them is explosive if in reach of fire, so this work should never be done at night, nor in a room where there is a lamp or fire in the daytime. Use a bowl and pour into it enough of the liquid to cover the gloves, wetting them thoroughly. Then smooth one of them out on a clean board and with a soft brush, sponge or cotton cloth rub them carefully, one way only, from the wrist to the finger tips. If the first bowl of benzine becomes soiled before the gloves are thoroughly cleaned throw the liquid onto the ground and start again with some fresh.

When you finish rinse and squeeze out in the clean benzine till they are as dry as possible, after which put them in the sun to continue drying. Have a clean, smooth stick about a foot long and rounded and tapered like a finger, and over this draw each finger of the gloves in turn, holding it smooth there while you rub it dry with fine soft muslin. When all this is done polish with white French powder and a soft flannel, keeping the glove fingers tight on the stick all the time. Put the gloves on every little while during the drying process, so they will not shrink too small, and when all is done you will be delighted with the results of your work.

Sweet Milk and White Soap make another cleaning mixture for gloves, and sifted white corn-meal will likewise do a great deal for them if they are not very badly soiled. In the latter case the gloves are put on and the gloved hands are washed for ten or fifteen minutes in the meal, just as if you were washing your hands in water.

TO MAKE GOOD SHOE POLISH

A very good shoe polish may be made in the following manner: Take one pint of rain water, one quart of cider vinegar, one-fourth of a pound of broken glue, one-half pound of logwood chips, one-fourth ounce each of indigo and isinglass and a small tablespoonful of soft soap. Heat it to the boiling point, then set it on the back part of the stove and let it simmer for half an hour, when it should be strained through a cloth, put into a bottle and corked tightly. Run a stiff wire through the cork and on the end fasten a piece of sponge with which to apply the polish.

HANDY POLISH FOR LADIES' SHOES

The best black ink, mixed with the white of an egg, will give ladies' fine shoes color and shine without rubbing off.

LADIES' LIQUID SHOE BLACKING

Gum shellac, two ounces; aqua ammonia, one ounce; water, eight ounces; enough black aniline to color. Boil all the ingredients together (except the aniline) until the shellac has dissolved, then add the aniline with a sufficient quantity of water to make the whole fill a sixteen ounce (one pint) bottle.

TO MAKE SHOE SOLES LAST LONGER

Soak the soles of a pair of shoes in linseed oil before wearing, and they will last as long as the uppers; particularly do we recommend this for boys' shoes.

HELPING BABY WALK IN NEW SHOES

Babies are often troubled about walking when new shoes are first put on them. This may be overcome by scratching the slippery soles with any blunt instrument.

CHAPTER VII

DINING-ROOM, KITCHEN AND BEDROOM

Table Linen and the Dining Table—Laundering Table Linen—Good Use for Worn Tablecloths—Decorating the Thanksgiving Table—Beautiful Centerpiece for the Table—The Dining-room “Handy”—Proper Care of Table Silver—Avoid White Wrapping Paper—How to Make Housework Easier—Kitchen Convenience and Comfort—A Kitchen “Memory Card”—Proper Ways to Wash Dishes—Dish Towels in Abundance—To Clean Tarnished Tin—Woodenware and Cooking Tins—Novel Uses for Salt—A Small Home-made Filter—Bedding for Winter and Summer—What to Do with Worn-out Blankets—An Easy Way to Clean Blankets—Cleaning Old Feather Beds—Bedbugs Destroyed—To Clean Hair Brushes and Combs.

It is an old saying that “there are tricks in every trade,” and so it is in housekeeping. There are more “tricks” and “short-cuts” in doing the work than the majority realize. In this department of the present volume it has been the intention to gather the best of these practical handy suggestions for housewives, so as to save them difficulties where possible, and solve some of the puzzles that rise in every home. And what could be more important than to save time and make the way easier for the deft and industrious ones who administer the affairs of the household so faithfully?

TABLE LINEN AND THE DINING TABLE

Dainty housekeeping pays for all the trouble it costs, in the comfort, and in the refining influence that does so much to mould the characters of the children. The dining-room should be bright and cheery and the table appointments above reproach. It is not enough to have fine table linen; it must be well looked after if we want to keep it at its best. You may have a lovely meal to serve, plenty of pretty china, glass and silver, but if your tablecloth is not snowy white and just the right stiffness your table will be spoiled in appearance.

Any Thick White Fabric May Be Used for a Silence Cloth if you do not get the specially prepared goods that is sold for that purpose. Two or three thicknesses of a worn counterpane, or white blanket, or

canton flannel, cut the proper size and sewed together, answers the purpose nicely. Such an under-cover makes the tablecloth look better, as it throws out the pattern of the damask, and it also prevents the table from wearing the linen.

Over this spread the tablecloth. White is preferred for most occasions, although many good housekeepers use red damask for the breakfast table. Table linen is not costly nowadays, and a spotless cloth should be considered a necessity. It is economy to buy a good article, for cheap linen does not wear as well as a good quality. The unbleached linen is cheaper than the bleached, wears better, and is perfectly white after a few washings. The durability as well as the appearance depends upon the laundering.

Examine the Table Linen Once a Week and darn the smallest break. The secret of this homely art lies in running the thread so far on each side of the break that it does not immediately fray and pull out the fabric. A tiny hole is easily darned, while a patch is very unsightly and ruins a nice tablecloth. Gather the tablecloths, napkins, doilies and sideboard covers together, and if any torn places are found darn them with threads drawn from new linen. Tray cloths should be used under all dishes the contents of which are liable to be spilled. These cloths save the table linen wonderfully, and are easily washed when they become soiled.

The Plates are placed evenly with enough space between them to give each person plenty of room. When individual salt-cellars are used they should be placed directly in front of the plates. Almost any family can afford silver-plated knives and forks, which are nicer than steel ones, and save the scouring necessary to keep the others in good condition. A low vase for flowers should be placed on a linen centerpiece, embroidered or plain as you prefer. See that everything is in perfect order before announcing dinner. The cover for the sideboard is usually made of butchers' linen, with the edges finished with hemstitched hems, and an embroidered border across the ends.

LAUNDERING TABLE LINEN

When small cloths and napkins are washed and dried and ready to be ironed dip them in boiling water and wring out between dry cloths. Then iron rapidly with a hot flatiron and they will be glossy

and stiff. The method of laundering counts for so much in the care of linen, and all stains and spots must be removed before it is put in the wash. If fruit or coffee stains are found upon the linen place the cloth over a large bowl and pour through it boiling water from the teakettle. Kerosene will take iron rust and old fruit stains from the cloth without injuring the fabric. Wash the soiled spot in the oil before it is put into hot water or it will do no good. Grass stains may be removed by washing with alcohol. For chocolate stains use cold water, then boiling water from the teakettle.

Table linen should be washed by itself to obtain the very best results. After all the stains have been removed heat the water, dissolve a little borax in it, and add enough to make a good suds. Wash the linen in this. The plain pieces may be scalded ten minutes, but those that are embroidered should never be put in hot water, as it will cause the colored silk to fade, and the white silk to turn yellow. Rinse in two waters, adding a very little bluing to the second. When borax is added to the water in which the linen is washed it will cleanse and whiten it and save most of the rubbing which wears it out more than use. An old tablecloth looks better when it is starched, but a new cloth needs very little starching. Add a little starch to the second water if any stiffening is desired. The dainty woman who desires to keep her table linen up to the standard must be able to direct the laundress if she does not do the work herself, for a housekeeper is judged greatly by the appearance of her table linens.

GOOD USE FOR WORN TABLECLOTHS

Carving cloths may be made from the best portions of worn tablecloths. Some of them are made double and quilted on the machine with red wash cotton, forming diamonds all over them. This makes them wear better than they would without the stitching. Other pieces of the tablecloth may be lined with old muslin and feather-stitched with the cotton. These enable people to use tablecloths much longer without washing them. This, of course, serves to make the tablecloths wear longer, for it is the frequent washings more than the wear they get which destroys them.

DECORATING THE THANKSGIVING TABLE

One of the most simple and appropriate table decorations for the Thanksgiving dinner is a fruit bowl made out of a pumpkin used for

the centerpiece. Great care must be exercised in the selection of the pumpkin, and it is necessary to prepare it Thanksgiving morning, as otherwise it might discolor. Cut it in half, carefully scoop out the inside, line with tissue paper, and generously fill with fine fruit— oranges, grapes, apples and bananas, reserving two bunches of white and black grapes for the top. Over the edge of the bowl a few ferns peeping out give an artistic effect. Also scatter a few judiciously over the table. To further carry out the color scheme a huge pumpkin-colored satin bow may be placed at one corner of the table and an orange sherbet added to the meat course, served in orange cups, made by cutting the oranges in half and removing the inside.

BEAUTIFUL CENTERPIECE FOR THE TABLE

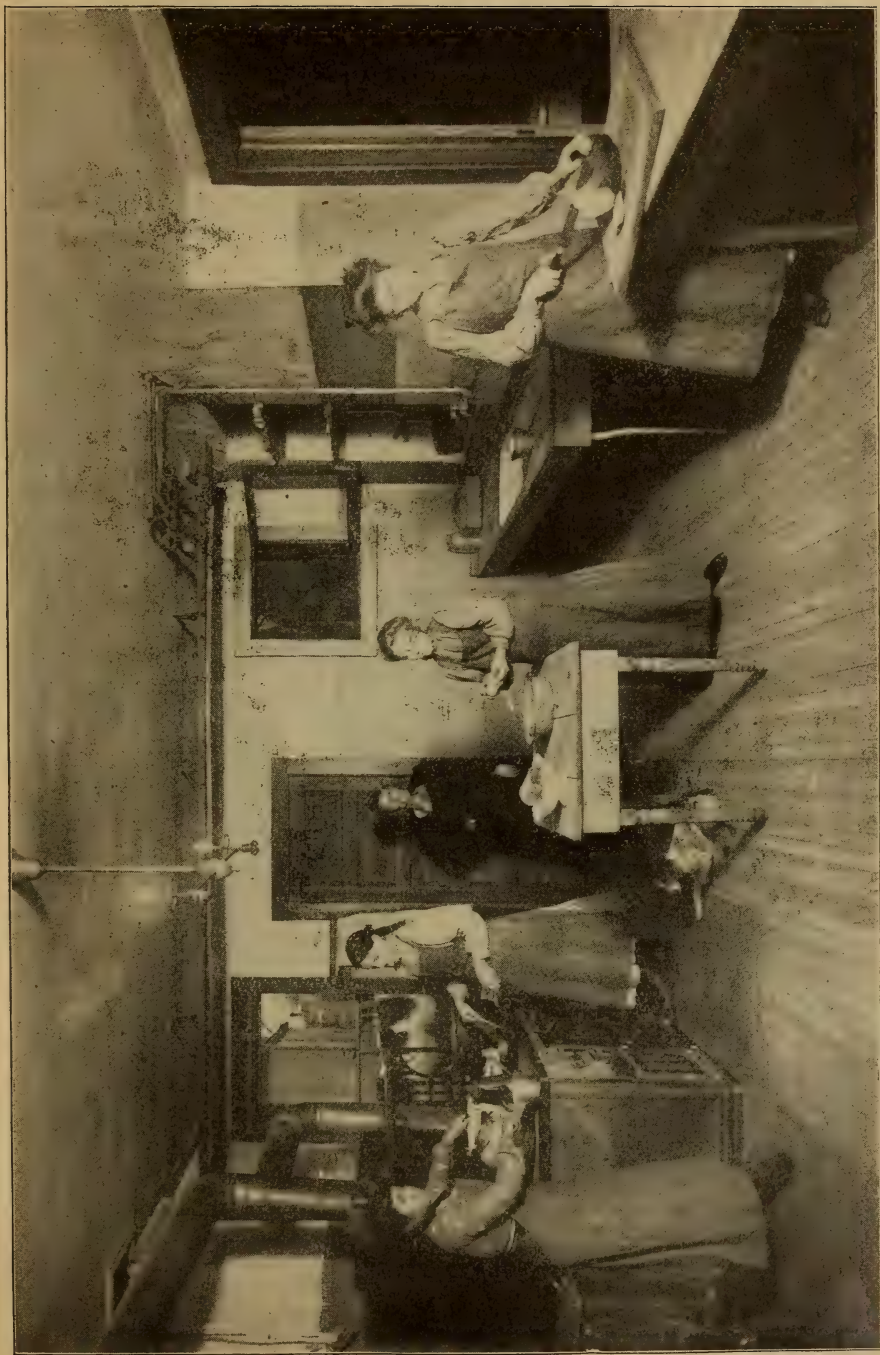
A centerpiece may be made for the dining table by taking a square looking-glass, minus a frame, and only those who have seen one can know how doubly effective flowers become when used in such an arrangement. A bouquet in a beautiful vase is not any the less beautiful when standing on the glass, while a handful of flowers dropped right on the glass or a border of ferns, grasses, or vines, or dainty branches of any sort placed on the edge of it produce an effect which must be seen to be appreciated.

THE DINING-ROOM "HANDY"

A cabinet for the dining-room fireplace may be made of pine obtained from dry goods boxes. This, of course, must be painted on the inside, and paint put on the edges, and when it is pushed into place only the inside will show. Ornaments such as mineral specimens can be placed on the shelves to help beautify the room while the fireplace is not in use.

PROPER CARE OF TABLE SILVER

Every good housekeeper stores away silver not in use, wrapped piece by piece in cotton flannel. Silver in daily use can be kept bright if washed in hot water, dried perfectly, while still heated, on a soft cloth and laid in a basket or tray with brown tissue paper at bottom and sides and on top to keep damp air from it. Now and then a little ammonia in the hot water is an advantage, as it will remove egg and other stains.



DOMESTIC ECONOMY IN THE KITCHEN.

To stop the leaks in the kitchen is the most important duty of every good housekeeper. To do this, she must either have gone through such a course in domestic economy as many of the universities now afford, or she must have a practical training at home. At all events, she should be often in the kitchen to see exactly what is going on.



"IT'S FUN TO HELP MOTHER."

A willing heart and a cheerful face not only lighten one's own work, but the labors of all those around. This is doubly true in household work, and while the little girl pictured above is exclaiming, "It's fun to help mother!" the mother is saying in her own heart, "The little dear pays her way a hundred times over."

The Frosted Ornamentation of Silverware should never be cleaned with silver polish, for it will gradually wear down and become smooth and polished like the rest of the dishes. Instead use a soft brush and strong lye, rinsing with soft water.

A Convenient Plan for Brightening Silverware without a powder or scouring is as follows: In one pint of soft water boil two ounces of carbonate of ammonia, powdered or broken up finely. Dip pieces of muslin in liquid and dry them without rinsing. When they are dry put them tightly together and lay them away for use. Simply rubbing the silverware with one of these pieces will give it a high polish.

Soap Should Never Be Put on Silverware if you wish it to keep its first brightness.

AVOID WHITE WRAPPING PAPER

Never wrap white goods, silverware, or anything which can turn yellow or tarnish, in white paper. If blue paper can be had it is the best, but if that cannot be had use the common brown paper rather than white. The chemicals used in bleaching the white paper will turn white goods, either cotton or woollen, yellow and will cause metal of any kind to tarnish.

HOW TO MAKE HOUSEWORK EASIER

A good housekeeper is as proud of a neat and attractive kitchen as she is of a handsomely furnished parlor. To insure this, system is as necessary as strength, for kitchen work is not drudgery unless you make it so. The woman who never has any dishwater hot, allows the rice kettle to dry, and the fire to go out when she needs it most, and does many other things of that kind, makes the work much harder than it should be. Some housekeepers can find anything they want at a moment's notice, while others must make a search for the simplest article every time it is needed.

The arrangement of the shelves in the pantry and kitchen may have much to do with making the work easier. Things that are needed most should occupy the shelves that are most easily reached, and all groceries should be put into boxes or cans that are plainly labeled. If all the materials for bread and cake making are put close to the flour bin it will save many a step. A coffee mill that is

fastened to the wall, having a receptacle above to hold two pounds of coffee, and a cup below into which it falls when it is ground, is very convenient.

A bracket lamp with a reflector that may be fastened to the wall or window frame costs only a few cents and is much better than having to carry a lamp around when it is needed. A clock that can be relied upon to give the correct time should occupy a conspicuous place. Hang a pair of scissors where you can be sure to have them when you need them.

Many kinds of provisions are cheaper when bought in quantities, and there is always a comfort in having a supply at hand. Soap may be bought by the box, and the longer it is kept the better it will be. Starch will keep indefinitely.

There are many tasks that may be performed while sitting down if you have an old office stool in the kitchen. If you have a high chair for which you have no further use the top may be sawed off, making a stool of it.

KITCHEN CONVENIENCE AND COMFORT

If there is one room in the house more than another that needs every convenience and comfort it is the kitchen. The housekeeper who elaborately furnishes her parlor at the expense of a bare, cheerless kitchen is not showing good management.

In the first place, there should be good, full-length screens at windows and doors, and white sash curtains, no matter how simple, at the windows. Linen unbleached probably wears the best, but there are pretty cotton screens at a very low price, and other fabrics that will answer nicely, as for instance, a good quality of cheese cloth.

When possible a kitchen veranda, screened with vines, will afford a cool retreat for preparation of vegetables, washing, etc.

Oil or gasoline stoves will save much more energy and patience than you are apt to estimate. By planning to do all your baking in the early part of the day, before the house is heated, you will conserve strength and health. Simplify meals in hot weather as much as possible—use more salads, fresh fruits, cold desserts and cooling fruit drinks.

Instead of scrubbing the kitchen table so frequently cover it with oilcloth, which only requires wiping off with a wet cloth.

A KITCHEN "MEMORY CARD"

Take the lid of a pasteboard shoebox, rule it with pen and ink, or pencil as for writing, and midway between lines at one side of the card make small round holes with a nail or leather punch. On each line write the names of such kitchen articles as are ordinarily used, making perhaps twenty entries; make small wooden pegs for every hole, attach each peg to a thread, and all the threads to one nail, on which hang the card. When anything is wanted in the grocery line stick one of the pegs in the hole opposite that article. When the grocer calls or the husband goes to town refer to the card.

WEAR SLEEVE GUARDS AT YOUR WORK

A great comfort in household work is sleeve guards. Knit ribs to fit the wrist, and knit plain to reach above the elbow. If you wish sleeves up, pull up the shoulder and fasten with safety-pin. These sleeves can be made of cloth with rubber in the wrist.

PROPER WAYS TO WASH DISHES

The washing of dishes is regarded as a very little thing which anybody can do. The most ignorant of servant maids is insulted if you inquire as to her ability in this respect, and resents any reluctance on your part to entrust your most precious china to her tender mercies. Watch her, however, and see how she handles it; piling glass, silverware and china, thick or thin, into one promiscuous heap in a not over-clean dishpan; pouring a kettleful of water over it, the water boiling hot, or barely warm as may happen to suit her convenience or the state of the kitchen fire; slashing the whole around, chipping and cracking it more or less in the process; draining the dishes, one upon top of another, without regard to weight or decoration, while the greasy water streaks on their dull surfaces; and finally wiping them, two or three at a time, upon a dingy, musty towel. Verily the sight is not one calculated to increase the appetites of persons destined to eat from dishes thus washed.

To wash dishes properly begin right. Make ready for the work by clearing off neatly, removing every crumb and bit of food from each dish. Drain cups and glasses; group each set of dishes by itself, placing the cups and saucers together. Put the silver on a small tray or on a dish by itself. Pile plates and platters carefully in

order, the greasy ones apart from the rest. Have plenty of hot, not merely warm water; soap which will make a good lather, or better still, a good washing powder, and plenty of clean towels. Whether a dish-cloth or mop is used depends upon your preference, but it is well to have both, a mop being indispensable for the cleaning of pitchers, glasses, etc. Besides you may wash dishes with a mop without even putting your hands into the water, thus keeping them from chapping in cold weather. If you use soap, have a soap cup, and never let your soap get into the dishpan. Dip the cup up and down, rubbing the mop on the soap until the dishwater is sufficiently soapy; just the proper degree of soapiness requisite must be learned by experience. By doing this you avoid all danger of finding bits of soap sticking to the dishes when you have finished.

COMMON-SENSE IN THE KITCHEN

There is more need of common-sense in culinary science than is ordinarily supposed, for we cannot become a strong people mentally unless our physical beings are well nourished.

DISH TOWELS IN ABUNDANCE

A good supply of dish towels is a necessity; do not try to get along with a few. Health and comfort are promoted by an abundance of every furnishing in the kitchen department.

DON'T LEAVE GROCERIES IN PAPER BAGS

All groceries and household supplies should be put away in their own proper receptacles, and not left standing in paper bags. Keep rice, oatmeal, cracked wheat, tapioca, etc., in close covered glass jars; tea and coffee in tin canisters; meal and flour in covered wooden buckets.

CANS FOR STEAMED BROWN BREAD

Tin tomato cans or large baking-powder cans are nice for steaming brown bread.

TO CLEAN TARNISHED TIN

You can clean the inside of your tin cooking utensils that have become tarnished from use, by filling them with soft water in which you have put a small piece of soap and boiling it for an hour or less.

TO RENEW RUSTED STOVEPIPE

A little raw linseed oil rubbed upon a stovepipe will stop rust and remove rust spots. After it is dry stove polish will cover the place and the pipe will look as good as new.

WOODENWARE AND COOKING TINS

Dry cooking tins well before putting away. Woodenware should not be dried near the fire as it will warp or crack.

HOW TO KEEP CHOPPING BOWLS FROM SPLITTING

Wooden chopping bowls may be rendered proof against the splitting which is so often the despair of the neat housekeeper by rubbing glycerine into the bowl. Do this repeatedly in order to fill the fibers, and thus prevent them from shrinking. Wooden buckets also may be treated thus.

ADVANTAGES OF PORCELAIN WARE

Porcelain ware, if treated well, will prove the greatest comfort. A porcelain pail will stay sweet and clean with the least scouring. If you will use a warm suds of pearline in washing the ware daily, it acts like magic in cleaning. Porcelain pie-pans are very nice also.

KEEP YOUR COFFEE-CAN CLOSED

When coffee is roasted keep in a close tin canister or it will lose half the strength.

COFFEE-POTS MUST BE CLEAN

Always keep the inside of your coffee pot bright to ensure good coffee. Boil it out occasionally with soap, water and wood ashes, and scour thoroughly.

SEALING-WAX FOR GLASS JARS

To make sealing-wax for sealing bottles and glass jars, take tallow, lard, beeswax and vermilion, each one ounce, and one pound and four ounces of resin. Melt them together and use while hot.

NOVEL USES FOR SALT

A little fine dry salt rubbed on glassware, and more especially lamp chimneys after washing them, gives them a nice polish.

Another use of salt is to sprinkle a tiny pinch of it over ground coffee just before adding the hot water. It brings out and greatly improves the flavor.

HOW TO KEEP FLIES OUT OF THE CHURN

To keep flies out of the churn sew up a piece of cloth like a sack with no bottom, put a gathering string in one end, and tie around the churn below the ears. Bring the other end up and tie tight around the dasher, giving length enough to raise the dasher as high as you wish. Very handy when children have to churn.

A SMALL HOME-MADE FILTER

A home-made filter for a small quantity of liquid may be made by putting a piece of sponge over the hole in the bottom of a large flower-pot, which should then be filled three-fourths full of a mixture of clean sand and charcoal pounded into small bits. Over this lay a woolen cloth large enough to hang over the sides of the pot. After the fine dust has washed out of the charcoal from a few fillings of liquid a clear stream will flow through the filter.

BEDDING FOR WINTER AND SUMMER

Plenty of bedding is one of the necessities in every home. This should consist not only of what is used daily, but extra sheets and pillow-cases should be laid away in case of sickness in the family, which will come to us all sooner or later. It is a good plan when these become worn and thin, and before any breaks come in them, to supply new ones to take their places and put these away for use when extra ones are needed.

It often happens in sickness that it is impossible to do washings, or to find help to do it for you, and then is when many extras are in great demand. Fine, unbleached muslin, when once whitened, washes more easily, and will retain its whiteness better than the bleached muslin, especially when one lives on a farm where there is much dirty work to be attended to. It is well, however, to have fine sheets and pillow-slips where one has much company. These may be made quite plain, or with much work, as leisure and circumstances permit. Very pretty pillow-slips are made by being hemstitched and trimmed with lace, or hemstitch and put in three fine tucks. Sheets look

nice when hemstitched, but it takes considerable time to do this. The wide pillow-case muslin and sheeting is preferable, as it saves labor and wears as well, or better. When buying muslin for this purpose one should select that of good quality, for it is always cheaper in the end to buy good material.

A few quilts for summer covering are convenient, but for cold weather good, thick comfortables, with a white counterpane on the outside, make a bed look well, and it is warm and more easily made than one with too many quilts. A counterpane is more easily washed and looks better than a quilt, and costs less if we count our labor anything.

WHAT TO DO WITH WORN-OUT BLANKETS

It is a good plan to look over the supply of blankets and see what we wish to do with them before the winter weather is upon us. A blanket seldom gets so badly worn that the pieces cannot be used. They usually wear thin in the middle first. Cut them in two lengthwise, turn the selvedge edges toward the middle and overhand together just as you would a sheet. Finish the edges with buttonhole stitch, using any kind of yarn you happen to have. This will greatly lengthen their period of usefulness. If worn uniformly throughout they make good linings for woollen comforts, or the best pieces of several may be joined together with flat seams and used for the interlining of a comfort, taking the place of part or all of the cotton batting, and making a very warm cover.

In using two or more thicknesses of blanket in this way try to have the worn places in one come in a strong place in the other. It often happens that the ends of a blanket are quite good, while the remainder is worn threadbare. Cut them off and make winter skirts of them for the children. The lower edge may be bound or finished with scallops, crocheted of good yarn. If they are too light colored dye them any shade of red, brown or blue you prefer. They will look well and wear better than many materials that are sold for skirts.

Blankets or any other woollen fabric may be washed without shrinking or losing their soft, fleecy look. Use soft water that is as warm as you can bear your hand in comfortably, and have the water the same temperature throughout the process. Dissolve enough pearline in the water to make a good suds and wash with as little

rubbing as possible to remove the dirt. A good washing-machine and wringer are almost indispensable in this work. Wash through two suds and fold smoothly before passing through the wringer. Put them into the rinse water, having it slightly blue if the blankets are white. Hang lengthwise on the line, turning enough of the edge over to hold and putting a clothespin every four or five inches to fasten securely. Pull the sides and corners even and shake them to remove wrinkles. When dry fold them and place under a heavy weight for a day or two. They will then be ready for use.

BLANKETS—AN EASY WAY TO CLEAN THEM

Here is an easy way and an effective one for cleaning woolen blankets. Put two heaping tablespoonfuls of powdered borax and one pound of good soap into a tub of cold soft water. After they are dissolved put in the blankets to soak over night. The next day rub them and rinse them thoroughly in two waters. Do not twist them or wring them out by hand, but simply press out the water or put them through a wringer. After they have dried on the line iron them with an iron which is not very hot while they are still slightly damp. The same general rules apply that are suggested in connection with washing other woolens.

CLEANING OLD FEATHER BEDS

Old feather beds may be cleaned without opening them and without steam by giving them a good soaking with hot water, or even in a heavy rain. Then let them dry thoroughly in the sun, beating and shaking them up at frequent intervals, so that the feathers will not mat. It may take some little time for them to dry thoroughly, but the results are worth the effort. A frame of boards should be made on which the bed can rest while draining.

To Clean the Tick at the Same Time, if it is stained, pulverize some starch and make a paste of it with soft soap. Cover the spots with this paste and when dry brush off and sponge the place with clean water.

BEDBUGS DESTROYED

To destroy bedbugs take a pint of alcohol, a pint of turpentine, and one ounce of gum camphor, thoroughly mixed. Brush the ends

of the bed slats and all cracks where the vermin can hide with this mixture and you will find it very effective. Being inflammable, however, no lamp must be used near it.

Corrosive Sublimate of Mercury in alcohol, a mixture furnished by any druggist and very poisonous, is one of the most cleansing of compounds to destroy such insect pests. It must be kept with great care where it will not get into the hands of the children.

TO DRIVE OUT MOSQUITOES

Mosquitoes can be kept out of bedrooms at night by leaving a wide-mouthed bottle of oil of pennyroyal uncorked in the room.

TO CLEAN HAIR BRUSHES AND COMBS

Hair brushes and combs should be washed in a weak solution of ammonia, a tablespoonful to a pint of soft water. Then rinse them in clean, cold water; shake the water from them and put them to dry slowly, not in the sun or by the fire. Brushes with wooden backs must be handled carefully, for the ammonia will discolor the wood if it touches them.

BEDROOM COMFORT

Inasmuch as one-third of our life is spent in bed it is but fair that particular attention should be paid to the furnishing and comfort of the bed itself, and the room in which it stands. Let the bedroom be furnished with simplicity, not crowded with unnecessary furniture, the windows not draped with heavy, dust-catching fabrics, and the floor not covered with carpets quite impossible to keep clean. The walls should be as free as possible from ornaments. The pictures should be in simple frames, easily dusted. The floor should have a rug before the bed, and one before the washstand and dresser, the rest of the surface preferably of bare hardwood, oiled, or ordinary flooring, painted. Then, with proper ventilation and attention otherwise, you may feel really clean in that most important of rooms.

CHAPTER VIII

ABOUT THE HOUSE

Managing the Family Wardrobe—Dress to Make Work Easier—Oilcloth Aprons for the Kitchen—An Idea for Underwaists—Making Old Hats New—Winter Clothing for Little Girls—Teaching Little Girls to Sew—Some Suggestions about House Plants—Growing Ferns for Table Pieces—To Destroy Weeds in the Lawn—Trailing Vines for the Walls—Helping Flower Seeds to Grow—Shrubs for Screening Foundations—Odd Designs for the Lawn—How to Make a Rose Jar—Rose Leaf Suggestions—Variety in Your House Arrangements—Sofa Pillows—Some Novel Ideas—Utility Boxes.

It is essential that every department of the household should be governed by the same rules of close observation and care. It were the height of folly to save in the kitchen and waste in the most careless manner in buying or taking care of clothing. We say of some people "they are born managers," but if we question them closely they will be apt to tell us they were trained to manage from their youth up. So many have to learn in the hard school of experience, and their lives are nearly spent before they have mastered the lesson.

The selection and care of clothing is a very important matter. To know how to buy and what to buy, how to remodel old garments and take proper care of new ones is an essential part of a good housekeeper's education. A small outlay of money, aided by watchfulness and care, will work wonders in making even a meager wardrobe last a long time and look well.

DRESS TO MAKE WORK EASIER

The short skirt is fine for morning wear and may be worn without a petticoat but with full bloomers of material to suit the season. A woman who has once worked in a short skirt will never again drag a long one about her kitchen.

For afternoon wear a dress may be made of navy blue calico, and worn with a white ruching in the neck and a white apron. It is nice

enough in which to receive guests, while not too nice to wear while getting supper. Wash dresses for farm wear are the best. In the winter they should be made warm enough by heavier underwear.

Long skirts cause many more steps, because one hand must be employed in holding the skirts away from the feet, when, with the short skirt, both hands may be put to work. Gored skirts may be made of denim with buttonholes worked in the band. The skirt can then be buttoned to waists of any material wished. In this way both skirt and waist are held in place, and the weight of the skirt comes on the shoulders, while long skirts cause the back to ache. Two or three waists are usually soiled before the skirt needs washing, for short skirts worn with big kitchen aprons do not soil very easily.

OILCLOTH APRONS FOR THE KITCHEN

Another use to which the light, pliable sort of oilcloth is adapted is the making of big aprons for kitchen wear. When washing, baking, canning or doing any of the work which is apt to muss one's clothing, so many aprons are needed that the laundry work required to keep a supply on hand is no slight thing when added to the week's work. A big apron of oilcloth may be put over the regular gingham one, and then it is but an instant's work to take it off if called to the door or where one wants to look fresh and clean.

An Old Gossamer Cape, or the skirt of a mackintosh which has become too soiled for use in its original shape, will make an apron, which, while not as easily cleaned as the glazed oilcloth, will be a very good substitute as long as it lasts.

AN IDEA FOR UNDERWAISTS

For making underwaists a basque pattern may be used, and they should be carefully fitted. They can be made of heavy unbleached sheeting. The outside is cut lengthwise of the material, and the lining crosswise, which prevents the garment from becoming shapeless. The seams are lapped and stitched four times, then the lining and outside are quilted together in inch squares, which makes them firm. The garment is cut low in the neck, and has no sleeves. It comes well over the hips, and the petticoats can be buttoned on its lower edge, thus preventing extra thickness over the hips. Wherever desired, strips of tape may be stitched to the waist, covering strips of

featherbone, which have previously been stitched in place. These waists wash easily.

MAKING OLD HATS NEW

Dainty and becoming hats need not be expensive ones, for there is many an old hat that could be freshened by brushing and sponging; the old crown may be replaced by a new one of velvet or silk if necessary, and other alterations made that will greatly improve its appearance.

To Clean a Hat Properly the trimming must be removed and the work begun with a thorough brushing to remove as much of the dust as possible. A black felt hat may be cleaned with ammonia and warm water and dried with a soft cloth, but if very soiled it must be scrubbed with a brush, then laid out on a flat board to dry, as it is apt to lose its shape if it is hung up when wet. Fuller's earth will clean tan or light brown. Rub it on with a piece of clean white flannel, and go over it the second time if the first is not sufficient. The lightest shades of tan may be cleaned in the same manner with oatmeal. It should be heated and applied with the flannel.

A tan felt that was faded and sadly out of style was colored a beautiful dark slate with diamond dye for wool, and brought up to date by placing a wire around the brim and bending it into shape. When the hat was taken from the dye and rinsed it was soaked in glue water to give the desired degree of stiffness, and the crown was pressed over a tin pail and the brim placed flat on the table and ironed under a thin cloth. You can get any color or shade you wish and the work is quickly and easily done. A light felt will take any of the rich dark shades, such as cardinal red, wine color, brown or dark green. The trimming may be made to cover any defects the hat may show when untrimmed.

If You Have White Ostrich Feathers that are too soiled to be used again, wash them in a warm water suds with a little soda added to the water. Dip the feathers and draw them through the hand; repeat this until clean, then rinse in slightly blued water if you want them to remain white, but if they are of an undesirable shade they may be dyed black or any of the bright colors with the dyes for wool or silk; rinse in cold water and shake them over the fire until they are perfectly dry, and curl the feathers by drawing each fiber over

the dull edge of a silver knife. Steel ornaments may be cleaned by scrubbing with a small nail brush, then polishing with a chamois or drying in sawdust.

If every woman realized how pretty her old hat could be made many dollars might be saved, and this knowledge is especially useful where there are several girls to dress, for their hats can be pretty and stylish even if they are old ones made over.

TO RENOVATE YOUR STRAW HAT

A straw hat may be easily whitened and made fresh in the following manner: Remove all trimming from the hat and brush until it is as free from dust as it is possible to get it, then on a bright, sunny day take a brush and give the hat a good scrubbing with soapsuds. Do not try to wash it white, but simply remove the worst of the smoke and grime, and be quick about it in order to leave the stiffening in the braid and the hat in good shape. While wet rub the braid full of sulphur and put the hat out in the brightest sunlight to be found. When dry rub the sulphur out with a brush and the result will be a surprise to one not familiar with the process.

WINTER CLOTHING FOR LITTLE GIRLS

Bloomers may be made for little girls to wear to school, out of black sateen. They may be lined with old flannel and quilted on the machine. The quilting is done before the seams of the bloomers are sewed. The lower part is sewed to the yoke of the sateen, made double and buttoned on each side with three buttons. The bottom of the leg is held just below the knee by means of rubber cord drawn into a narrow hem.

These bloomers are warmer than three petticoats would be, and they make dresses look better than so many undergarments. When little girls wear these they can slide down hill and do not get covered with snow, and their underclothing, if exposed, does not look so badly as if it were white and thin. They can wear union suits next their bodies. These, with two pairs of stockings, one petticoat, one woolen gown, a stocking cap, mittens of angora wool and a lined jacket, enable them to go to school in the coldest weather without suffering, and to play out of doors with their brothers whenever they choose.

AVOID RED FANCY WORK AT NIGHT

It is claimed sometimes by physicians that the color red very often produces injurious effects upon the eyes. For this reason it is wise to eschew red embroidery as an evening occupation, and to substitute for it green or blue, which are believed to be beneficial.

TEACHING LITTLE GIRLS TO SEW

The time for teaching a little girl sewing by giving her dish towels to hem and sheet seams to overhand is past. A better way has been found, and she learns happily and not grudgingly and with tears. The needle is no longer pushed with painful effort through rough crash and stiff sheeting, but slips easily through the bits of old linen and muslin that are destined to make something pretty to stock the little needlewoman's wardrobe or bed, or her own small tea table. She is using her imagination as well as her fingers, and happy indeed she may be. Is there any comparison, in point of interest, between a big dish towel and a dainty little one for play dishes, a small oblong cut from the whole portion of a big crash towel and hemmed neatly?

A little girl will like to learn to darn linen if the worn dinner napkin she is set to work on is afterward to be nicely washed and ironed and become one of her own little tablecloths. And could hemming fail to be alluring when the whole parts of another napkin are cut into squares for small fingers to make into doll napkins? From pieces of old handkerchiefs may be cut squares to be fringed for doilies, useful on doll tables and toy bureaus. In fitting up these bureaus with dainty knickknacks a little girl will enjoy many a scrap of lace and ribbon, and will learn to be skillful with her needle.

MARKING SCHOOL HANDKERCHIEFS

A mother is often annoyed by the number of handkerchiefs school children lose. If you will write the name of the owner upon them with indelible ink the finder will usually return them, and many dimes will be saved during the year. If neatly done it will not injure the appearance of the handkerchief. All garments should be plainly marked before they are sent to the laundry.

SOME SUGGESTIONS ABOUT HOUSE PLANTS

Some people succeed with house plants and others fail, although seemingly the conditions are the same. There is something about

house plants that is not well understood. They seem to flourish under little attentions and to fade when neglected in any degree. A little knowledge of their characteristics makes a great difference in their welfare. Some like sun and a high temperature, and others do best when kept comparatively cool.

The Reason Why House Plants Do Not Succeed in so many homes is because the air of the rooms is too dry. If a room is kept warm all the time and closed from moisture, the air becomes very dry and no amount of watering the roots will make the plants flourish. Air that is kept so dry that house plants do not grow is too dry for the good health of those living in the house. In a stove or steam-heated house there should always be moisture enough to show on the windows in cold weather. Where windows do not "steam" in winter, water should be evaporated in the room until this occurs.

Where the kitchen and the living-rooms adjoin, as they do in many houses, it is a good plan to keep the door between the rooms open except when cooking is being done, and at such times no harm can come to the plants, but the odors arising from the cooking may not be pleasant.

More house plants are injured by too much water than by too little. Plants that are kept in common earthen pots need more water than those kept in glazed pots, as the water evaporates through the porous sides of unglazed pots. Many people have found tin cans the best things to keep house plants in, and use them in preference to unglazed pots.

Red spiders and mealy bugs kill a good many house plants, but they may be washed off with rainwater and good soap. The soap does not hurt the plants if it is carefully rinsed off with warm rain water as soon as the washing is finished.

The Earth That Is Put into the Pots is a most important factor in growing house plants. The best mixture is cow manure and clear sand in about equal quantities, piled up until thoroughly rotted and incorporated into a homogeneous mass. If to this is added a little of the flower fertilizer that is sold by florists the result will be altogether satisfactory.

Those plants which have rough or heavy leaves should be sprinkled at least once a week to wash off the dust, and smooth-leaved plants should be carefully washed with a soft cloth every week.

If the dust is allowed to accumulate on the leaves it will prevent the plants from breathing and they will die sooner or later. If little white worms get into the soil in the pots stick some matches into it with the heads down and they will soon die, the sulphur and phosphorus being fatal to them. If red spiders or flies bother them cover the plants with an old newspaper and fumigate them by burning tobacco under the paper.

As soon as a leaf begins to show signs of fading cut it off, and as soon as blossoms begin to pass their prime remove them so as to prevent the formation of seed.

It is not practicable to keep an even temperature in the average dwelling house, but house plants can be made to flourish even if there is a wide variation in the temperature through the day and night. If the temperature is kept above the freezing point the flowers will live and flourish although not quite so vigorously as they will if the temperature never runs down below about 50 degrees.

Begonias, coleus and other soft stemmed plants cannot be given too much sunshine nor too high a temperature in an ordinary dwelling house. Fuchsias, carnations, parlor ivy, geraniums and others that have woody stems and tough leaves do better when kept out of the direct rays of the sun, or at a little distance from a south window.

It is best to let old plants, except fuchsias, begonias, cacti and ivies, die, and start new plants from cuttings each year. The old plants become scraggy and ill-shaped in a year and the new ones bloom best.

House Plants Are Wholesome Things to have in the house. Some think they vitiate the air of a living-room, but the contrary is the truth. The poisonous carbon dioxide, or carbonic acid gas exhaled from the lungs of animate beings is absorbed by the leaves of plants and goes to their support. This shows that house plants are beneficial instead of injurious.

It is perfectly easy to have flowers every day in the year if the house plants are not kept in too dry a room and are not watered too much at the roots. A house plant never needs water until it begins to show signs of thirst, but it should not be allowed to remain in this condition very long. By watching the plants one soon learns to know their needs in this direction and so keep them at their greatest thrift and best estate

Where house plants are kept it is best to keep a vessel of water constantly on the heating stove. This keeps the air in the room somewhat moist and prevents the plants from drying out. This condition is also better for the people who live in the room, as it keeps down the finer particles of dust that always float in a room that is heated and kept perfectly dry.

TO MAKE CUT FLOWERS LAST LONGER

If a little camphor is added to the water in which cut flowers are put the period of their freshness will be considerably extended.

GROWING FERNS FOR TABLE PIECES

A very nice centerpiece is a plate of growing ferns. Go to the woods early enough in the season to get the ferns before the fronds are fairly unrolled. With them bring home plenty of the soil in which they were growing and some moss. After planting the ferns in their native soil on some old plates cover the whole thing over with the moss and keep the plates in a shady place. Very soon the ferns will be growing beautifully, and may be carried from place to place. A small oval platter is liked the best for the dining table. Put them where you will, such ferns will be admired, but in no place will they give quite so much pleasure as when sent into the sick room of some weary invalid to whom they are like a breath of new life with their fresh, green beauty and their woody fragrance. It is worth while to go to considerable trouble to secure the ferns, for they will grow year after year. Keep them growing summers and let them rest during the winter—in the darkest corner of the cellar.

WEEDS IN THE LAWN—TO DESTROY

Plantains and dandelions, when they invade a blue grass lawn, may be destroyed by dropping a drop of sulphuric acid into the center of each plant as it comes up from the ground. You must be careful not to get too much acid on the ground for it will kill the grass likewise where it touches.

TRAILING VINES FOR THE WALLS

No matter how beautiful your home is its appearance can be improved by the addition of a few trailing vines. If you are a busy

person and cannot give much time or attention to their cultivation be careful in your selections. It is a mistaken idea that vines keep a house damp; on the contrary they repel moisture. If you have room for only one it is difficult to choose between English ivy and Virginia creeper, though the latter seems to be a general favorite. Dense and green in summer, they are no less beautiful with their bright and glowing tints in autumn. If you choose English ivy plant it on the north side of the house.

The trumpet creeper, with its dark leaves and beautiful red flowers, climbing oftentimes to the eaves, is very attractive.

The wistaria is a favorite with many, but it requires careful training, else its stems become too strong and hard to handle.

The honeysuckle, of which there are many varieties, is very desirable on account of its abundant foliage and sweet perfume.

The showy, deep violet-colored flowers of the clematis jackmanii always attract a good deal of attention, but to keep the vines in good condition is quite a task. Some prefer the small flowered species, especially for porches and piazzas, on account of their profusion of blossoms; they grow readily and are beautiful until early fall.

Climbing roses are always a delight to the eye, but special attention is necessary to keep them free from insects. Of the many varieties, I doubt if any gives less trouble or is better loved than the old-fashioned prairie rose. There are many varieties of vines, but we have mentioned these because they are easy to get and easy to make grow.

HELPING FLOWER SEEDS TO GROW

When sowing fine flower seeds press down the soil lightly, sprinkle well and cover to the depth of an inch or so with clean hay. After this if the weather is very dry sprinkle once a day (over the hay) and your beds will keep moist and warm and there will be no crust.

SHRUBS FOR SCREENING FOUNDATIONS

Plant a few small shrubs near the house, so that the foundations of the house will be screened and the house seem to rise out of its surroundings. The choice of shrubs depends somewhat on the soil and location. There are a great many shrubs that are very appropriate for planting on the grounds, but only a few will be named here.

Common Lilac, *Syringa Vulgaris*.—This is one of the commonest and most highly praised of garden shrubs, and one that has given rise, either by natural variation or by crossing with other species, to a great number of superior forms. The colors range from white to various forms of lilac.

Syringa Persica.—This is a distinct small growing species, with slender straight branches, and lilac or white flowers produced in small clusters. The form bearing white flowers is named *Syringa persica alba*, and there is one with neatly divided foliage, *Syringa persica lanciniata*.

Philadelphus.—This is a genus of shrubs which are remarkable for the abundance of white and usually sweet-scented flowers they produce. They will thrive on almost any good soil, and require no special treatment. *Philadelphus coronarius*, *Philadelphus tomentosa*, *Philadelphus gordonianus* are all large growing bushes and give a succession of bloom.

Honeysuckles, or *Lonicera*, are all of the readiest culture, and succeed well even in poor soils. There are a large number of species, some vining and some of a sturdy, bushy habit. *Lonicera fragrantissima* blooms early and is very fragrant. It retains its leaves nearly all winter. *Lonicera tartarica* produces white and pink flowers in the spring, and later during the summer yellow and red berries are formed, which are as attractive as the blooms.

Berberis Vulgaris also produces attractive flowers in the spring and scarlet fruit in the fall.

Spireas are excellent shrubs and make very good low screens, and also give a beautiful display of flowers. *Spirea Thunbergii*, *spirea Van Houttei* and *spirea reversiana* give a succession of blooms.

Deutzia Gracilis and *Deutzia Crenata* *Floraplena* are very compact shrubs with close spikes of very attractive flowers.

ODD DESIGNS FOR THE LAWN

As a general rule flowers look better when grown without trying for odd effects, but there are a few designs that always attract attention. One of these is a gypsy camp-fire. Three poles are set up in the shape of a tripod and to these is hung an old iron pot of any kind. The pot is filled with soil and in it is planted candy tuft, sweet alyssum or any other free-blooming white flower. Under and

around the pot are planted scarlet geraniums. When the flowers begin to bloom the flowers of the geraniums represent the fire under the pot and the white flowers growing from the soil in the pot represent the foam of the boiling dinner supposed to be in the pot.

A floral tent is easily made by planting a pole in the ground, digging a circle eight or ten feet in diameter around it and planting in this any kind of flowering vines which are run on strings to the top of the pole.

A very cool, pleasant summer house may be built by putting up a rough frame and roofing it, and then covering the sides with vines of all kinds. Morning glories, wild cucumbers, cypress, gourds and other climbing plants may be planted in variety and the growth of these will be an interesting study while enjoying their shade.

A floral basket is made by sticking green willow twigs in the soil in the spring, setting them in the shape of a basket and weaving them together to represent the woven work of a basket. Two long twigs are twisted together as the handle, and when finished the basket is filled with soil and in it a variety of free-blooming flowers are planted. The willow twigs will grow and must be kept trimmed during the season, while the flowers, when they come into bloom, will look very much as if some one had been gathering a bouquet and had set it down and left it. This is one of the nicest effects imaginable if nicely made and placed so as to look as if it might have been set down without thought.

HOW TO MAKE A ROSE JAR

You must busy yourself gathering and "curing" rose leaves with salt through the months of June and July in preparation for a potpourri, and then follow these directions: If there is a quart in all you have the foundation of a good potpourri. Now transfer the stock to a glass fruit jar, on the bottom of which you have placed two ounces of bruised allspice and as much stick cinnamon broken into large pieces. The water, if any, should be drained away. Here allow it to remain one month closely covered, stirring it up thoroughly every day from top to bottom.

It is now ready for permanent preservation. The blue and white Japanese jar is best to hold it, for it preserves the fragrance. Now have ready an ounce each of mace, cloves and allspice closely ground,

the same quantity of sliced ginger root and nutmeg, half as much anise seed and four ounces of musk, with six ounces of dried lavender flowers. Again strew the rose leaves in the permanent jar, alternating with these mixed spices, moistening from time to time with pure alcohol, using about one gill in all, and the jar is complete. If desired other flowers may be added, such as violets, heliotropes, mignonettes, rose geraniums and tuberoses.

ROSE LEAF SUGGESTIONS

People Who Have Rose Jars should not forget to add a little to them while roses are abundant, for that is the secret of keeping them in perfect condition year after year. Gather petals in the morning or evening and spread on a sheet in a shady place. Toss them up well every day until thoroughly dry, and then put in glass jars or some other tight receptacle until wanted for use.

The Making of Rose Jars is not the only use to which these dried petals may be put, for rose pillows and rose bags are almost as desirable. In all the summer rambles remember to mark the spots where cat-tails or milk-weed plants are seen growing; then when the proper time comes go and get the seed heads, or pods, and save the down from them. While a pillow made entirely of rose petals, or entirely of down, is desirable, one made from a mixture of the two is equally so.

Make the ticks of fine muslin and of a size suitable for the place where it is to be used, for, of course, these pillows are too fine to be used as bed pillows and are meant for the sofa, the chair back or some like place.

Cases of silk, lawn or lace make beautiful satchel bags when filled with rose petals, and may be made perfectly plain or embroidered as the maker sees fit.

To Make a Fine Tincture of Roses fill a can or wide-mouthed bottle with rose leaves and then put with them all the pure spirits of wine which the can will hold. Cork or seal and let stand at least two months before using.

A Rose Paste for Flavoring is made by chopping a cup of rose petals with three cups of fine sugar until it becomes a smooth mass, and heating thoroughly in the oven, though not letting it remain long

enough to entirely melt the sugar. Put in air-tight cans and keep for six months before using. This paste is far superior to any extract, and being very strong a small quantity will flavor a cake.

Another Recipe.—Gather the petals from full-blown, but not withered, roses; weigh them and place an equal weight of sugar in a vessel with just enough water to moisten it. Set the vessel in the sun until the sugar dissolves, then place over a slow fire. As soon as the syrup boils up add the rose leaves and stir gently for ten minutes, then remove from the fire and when cold pack in jars.

VARIETY IN YOUR HOUSE ARRANGEMENTS

Very few housewives are so fortunate as to be able to have one set of furniture and hangings for winter use and another for summer, but even when using the same things the year through it is a very easy thing to change effects by changing positions of furniture and pictures, and arranging a new style of draping for curtains and spreads. The deadly monotony of a room where everything is always found in the same position is enough to give one a fit of horrors, and it is inexcusable, too, for there is no reason for it.

Nothing can do more to lighten and brighten rooms than a judicious use of looking-glasses. A long glass placed across the corner of a rather small room, with some dainty, though not expensive material draped in such a way as to look like portières, may hide either a very cheap wooden frame or the absence of any frame at all, and with an arrangement of the stands, plants or furniture that will cause them, or at least part of them, to be reflected in the glass, the size of the room is, seemingly, almost doubled.

To do this it is not needful to have a glass that will reach from the floor to the ceiling, for the curtains can be so draped as to suggest only a partial opening, but the higher it is, of course, the better the effect. Put a looking-glass in almost any possible position where it will double the effect of any beautiful object, and not look as if placed there to minister to personal vanity, and the room will be the more pleasant for it. In the summer time if there is a beautiful, leafy, flowery view from any window, hang a glass opposite that window and note what a fascination it will have for everyone who comes into the room.

SOFA PILLOWS—SOME NOVEL IDEAS

This is decidedly an era of sofa cushions, and where the housewife does not possess the requisite skill in embroidery, or where her ambition is for a pretty cushion without much expenditure of time she may utilize the silk scraps for this purpose.

The pattern used for these covers is called "biscuit" work, and is very popular, as it makes lovely covers and any remnant of silken fabric, new or old, satin, velvet, plush, long or short pieces, from the smallest scrap to the discarded silk waist, can be used. If there is not enough silk for a square, one can be made with small pieces and the piecing concealed with narrow ribbon or any of the embroidery stitches. Cut the silk pieces into three inch squares and sew a box plait in each side, which will form a puff; now baste three sides to a lining two inches square, and before basting the fourth fill with cotton batting. There are several ways of arranging the blocks, and the blending of colors may be varied to suit one's taste.

A very handsome cover seen recently had not cost the owner anything but the time to make it, and it was prettily arranged like patchwork, alternating the light and dark colors. This is perhaps the best way where one has a great variety of pieces. The blocks were all made and then arranged to suit the maker's fancy. The lining had been an old light silk waist, colored with a dye of chosen hue, and a lot of white and faded ribbon was colored at the same time, and by weakening the dye during the process several different shades of red were obtained. The edges were trimmed with two shades of ribbon twisted together over a heavy cord which made quite a pretty finish. Some of the finer woolen scraps may be employed in this kind of work, but it is better not to mix them. If there is not enough silk make a cover of bright woolen pieces.

Very nice down pillows can be made by saving chicken and turkey feathers and drying them. Put the feathers in a bag, and some leisure hour strip them and throw away the quills; put the down thus secured in another bag and tie it securely. Save them in this way until you have enough for a cushion, and you will have a nice foundation for your cover.

UTILITY BOXES

When one has no closet, or at best a small one, a set of "utility" boxes is a great help toward keeping clothes in good condition, and the room looking tidy.

Have four light wooden boxes made of uniform shape, but each one smaller than another, so that when piled one on top of the other they will make a symmetrical looking pyramid. The only requirement as to size is to have the largest one of a size that may be lifted easily when filled. In form they may be either square or oblong, according to the space where they will usually stand.

First line the boxes, and cover them; prepare the cover in the same way; then hang the cover with light hinges and put handles on the ends of the box to lift it by.

Some very beautiful boxes are lined with silkoline, covered with cretonne and fitted with brass hinges and handles. The question of trimmings is, of course, a matter of taste, and the amount one wants to expend. The boxes may be made of very inexpensive materials, and yet if they match, or at least harmonize with the other furnishings, will be truly ornamental as well as do away with the "cluttered" look which a lot of odds and ends of boxes will give to the prettiest of rooms.

If one box is made long enough to lay a dress skirt in, and broad enough to be well proportioned, it is a good size for the bottom one of the set, and with a rug and a few cushions may be made to serve as a window seat on occasion, or as the seat in a temporary cozy corner. The possibilities of the set of boxes in the way of usefulness or ornament will never be quite realized until one has had them to use.

CHAPTER IX

SOUP, FISH AND MEAT RECIPES

Something about Food Values and Nourishment—Degrees of Heat for Best Cooking—Practical Pointers about the Oven—Keeping Food from Spoiling—How to Measure for Recipes—Meat Soups—Vegetable Soups—Salt Fish—Fresh Fish—Dainty Dishes from Left-over Fish—Oysters and Clams—Chicken—Turkey—Miscellaneous Poultry Recipes—Beef—Mutton—Veal—Pork—Breakfast Dishes—Game—Fish and Meat Sauces.

The growing interest of women in housekeeping, homemaking and all kinds of household affairs is the direct result of intellectual development.

During the last generation there was a marked decadence in housewifery owing to the narrow-minded idea that a knowledge of housekeeping was incompatible with refinement and social grace.

But a higher education has given to women a wider, larger range of vision, and the women of to-day recognize the dignity of labor. To be a capable and proficient professor of housewifery is now considered by women of all stations in life to be not only necessary but desirable, and refined and educated women all over the country now heartily endorse George Herbert's divine truth,

Who sweeps a room as for Thy laws,
Makes that and the action fine.

A more recent writer, the anonymous author of *Elizabeth and Her German Garden*, says in that delightful book, with equal truth: "And above all, let the women, pretty and plain, married and single, study the art of cookery. If you are an artist in the kitchen you will always be esteemed."

This department of the present volume has been planned to serve the homemakers who want to put more skill into their work, and to obtain more satisfactory results from it. It has not been the intention to fill the pages with those things about cooking which everyone

who cares to know, knows already. Instead of this the purpose has been to make it a treasury of valuable hints, of novel suggestions, of serviceable ideas. The intention has been to gather the information that will make the day's work simpler, easier and more interesting; to offer recipes which, without going into fancy cooking or increasing the cost, will make the meals more attractive, appetizing and wholesome; and to show the most practical and convenient ways of using the food that we buy, whether when first served or when "left over," so as to get the most benefit from it.

The editor is one who believes that no food is too good for the average American household, in town or country, and that it is in many instances possible to make better use of the food at our disposal than is now the case. So it is that some recipes are included for the preparation of food not altogether familiar to everyone, but well worth using.

LOOK AT THE INDEX

It is specially urged upon all who wish to get the greatest service out of this department, as out of the whole volume, that they should make use of the index at all times. There is an eternal puzzle in classification. Should a recipe for apple pudding be included in a chapter on puddings or one on apples? Such questions arise scores of times in a book of wide scope. They have been answered as well as the editor's judgment could guide, but unavoidably there are separations of subjects apparently connected in some instances. Therefore, to be certain that you are missing nothing, look at the index for whatever you want, and you will be reasonably sure to find it easily.

SOMETHING ABOUT FOOD VALUES AND NOURISHMENT

Although "hunger is the best sauce," a daintily garnished dish is the next best.

A pound of lean beef and a quart of milk contain about the same amount of nourishment, but the meat, although it costs more, is more valuable for food, as it contains the nutriment in more suitable proportion.

The popular notion that "fish is a brain food" is a mistake, for eminent physiologists tell us that fish no more than any other nitrogenous food contributes to brain growth and development. All nitrogenous foods, such as fish, meat, eggs, and so on, repair the

waste tissues of the body, but fish is of no more importance than the others.

Corn-meal is an excellent food for winter, as it contains so much fat, and when eggs and milk are added to it, it has a high nutritive value.

Four or five ounces of sugar is all that an adult in good health should eat in the course of a day.

DEGREES OF HEAT FOR BEST COOKING

One of the most vexing problems with which the young and inexperienced housekeeper has to wrestle is the exact degree of heat required for cooking the various foods which she may have to prepare. As the digestibility as well as palatability of all roasted, baked and fried dishes depend upon the proper adjustment of the heat used in cooking to the requirements of the article to be cooked, it is absolutely necessary for every conscientious cook or housewife to pay special attention to this subject. It is largely a matter of judgment after all, for while general rules are helpful in a certain measure they cannot always be applied to particular cases, and the experienced cook or housekeeper can tell at a glance whether her roast, fish or chicken is receiving just the right amount of time and heat.

As Regards Roasts, the hottest oven is required for beef and mutton, hot enough to at once form a crust on the outside of the meat, so that none of the rich juices may escape. The old rule of fifteen minutes to the pound and fifteen minutes over is a good one to follow in cooking these meats, unless one prefers them quite well done, when a longer time will be needed. Lamb, requiring fully twenty minutes to the pound, also needs a hot fire, though more steady than for beef or mutton, and not so hot at the start.

Veal or pork, on the contrary, should be roasted in a moderate oven, so that the heat may pass through the outer skin to the very heart of the meat, leaving no particle of the fiber uncooked and on that account indigestible. The time of cooking is the same as for lamb, and the same rule may be followed with poultry.

Pastry Is Best baked in a very hot oven, but the heat must be largely at the bottom, that the undercrust may be dry and crisp, not soggy.

All Articles Fried in deep fat must, as a rule, be cooked rapidly, but chicken and chops are exceptions, as they must be cooked slowly enough to be thoroughly done down to the bone.

If the fat begins to foam while frying croquettes, codfish-balls or doughnuts, it is a sign that it is not hot enough. The frying should be stopped for a few moments and the kettle pulled to the front of the range until the proper degree of heat is reached. The digestibility of these articles depends upon their immediate encasement in a crust firm enough to prevent further absorption of the fat. When the fat begins to smoke a bit of bread may be dropped in, and if it browns while one can count sixty it is hot enough for doughnuts and potatoes; for croquettes, oysters and fish-balls it should be hot enough to brown the bread while counting forty.

The Following List will be found quite helpful by those whose experience along this line is as yet limited:

To be cooked in a slow but steady oven—pork, veal.

To be cooked in a moderate oven—poultry, game.

To be cooked in a hot oven—beef, fish, omelets, mutton, bread, soufflés, lamb, cake, puddings.

To be cooked in a very hot oven—chicken, pork chops.

To be fried deep in boiling fat—soft-shell crabs, crullers, oysters, croquettes, scallops, fritters, potatoes.

To be sauté in hot shallow fat—fish, omelets, sliced ham, eggs.

PRACTICAL POINTERS ABOUT THE OVEN

The use of a thermometer in the oven of a practical cook is an assurance of success in baking.

If your oven is too hot you can cool it by putting in a dish of cold water. If it is too hot on the top lift the lids which are over the oven.

Baking-powder biscuits require much more heat than bread; 440 degrees Fahrenheit is right for biscuit, while a temperature of 380 degrees is better for bread.

Bread crusts should be dried in the oven and put away in paper bags until wanted for use.

KEEPING FOOD FROM SPOILING

Any food which has been kept on ice will spoil much more rapidly after being taken off than that which has not been on ice at all, but this fact is particularly true in regard to meats.

Another place where food-stuffs are often spoiled is in the oven. Be sure that the oven is hot enough to begin the cooking process at once when anything is put in, for many a roast shows taint that would have been sweet if the oven had been hot enough when it was put in. What is true of meat is equally true of milk and some other things, and care is required concerning these little points.

TIN VERSUS EARTHEN DISHES

Tin basins should never be used for food that is to stand in them over night. Better get earthen pudding dishes, which leave no bad taste in the food.

HOW TO MEASURE FOR RECIPES

- Four teaspoonfuls of liquid make one tablespoonful.
- Eight tablespoonfuls of liquid, one gill or a quarter of a pint.
- A tablespoonful of liquid, half an ounce.
- A pint of liquid weighs a pound.
- A quart of sifted flour, one pound.
- Four kitchen cupfuls of flour, one pound.
- Three kitchen cupfuls of corn-meal, one pound.
- One cup of butter, half a pound.
- A solid pint of chopped meat, one pound.
- Ten eggs, one pound.
- A dash of pepper, eighth of a teaspoonful.
- A pint of brown sugar, thirteen ounces.
- Two cuofuls and a half of powdered sugar, one pound.

SOUPS

When Making Meat Soup put away a can of the rich stock to be used some other day. Do not try to keep it very long, but it is well to have a can of soup stock on hand, for with that as a foundation one may make many varieties of soup. It is also nice when making meat pie from bits of meat that have been left over, and from it one can have good gravy even when there is no meat on the table.

Mutton Broth.—Cut four pounds of lean mutton into small pieces and boil it for two hours slowly with one gallon of water in a covered vessel. Then add half a teacupful of rice, which has been soaked in

warm water. Cook it for an hour longer and season in the usual fashion. This is one of the best soups for invalids.

Beef Soup.—The stock for beef soup should be made the day before it is to be used. Take lean beef and have the bones well cracked, so that you can put the marrow into the soup. The rule is a pound of meat to a quart of water. Put the meat and bones into the water in a covered kettle and boil it slowly for six hours, after which set it away to cool. In the morning take off the fat, which will be floating on the surface, heat the stock slowly and throw in a little salt. The scum will rise to the surface and can be skimmed easily. If you have started with six quarts of water and have replenished it during the boiling when it got too low, you will have enough stock for a large service of soup. Slice two carrots, three turnips, half a head of cabbage, one head of celery, one quart of tomatoes and a pint of green corn. The vegetables must be stewed in a small amount of water until they break to pieces. It is best to cook the cabbage by itself in two waters, throwing the first away. These vegetables should be put into the stock after it is skimmed and the whole mixture boiled slowly for half an hour. Strain the soup without pressing, and it is ready to serve. The seasoning should be salt and pepper and such sweet herbs as you prefer. The same stock can be used for many other soups.

Chicken Soup.—Take two young chickens, or one full grown one, and cut them into pieces as for fricassee. Put these pieces with half a pound of ham into a quart of water and stew until they are fairly tender. Then take out the breasts, leaving the rest of the meat in the pot, and add three quarts of boiling water. Keep the soup stewing slowly while you chop up the white meat you have taken out. Rub the yolks of four hard boiled eggs smooth in a bowl, moistening to a paste with a few spoonfuls of the soup. Mix with these a handful of fine bread crumbs and the chopped meat and make it into small balls. After the soup has boiled in all two hours and a half strain out the meat and bones. Season with salt and pepper and with a bunch of parsley chopped fine. Drop in the balls of prepared force meat and after boiling ten minutes longer add, a little at a time, a pint of rich milk thickened with flour. Boil up once and serve.

Oyster Soup.—Put the liquor from two quarts of oysters into a tea-cupful of water and heat slowly in a covered vessel. When near

boiling season with pepper and salt and pour in the oysters, letting them stew for about five minutes. At the end of this time put in a quart of milk in which two tablespoonfuls of butter have been heated in a separate vessel and stir well for two minutes.

The important thing about oyster soup is to have it cooked just enough. The rule is that when the edges begin to rise in corrugations or ruffles they are at the proper stage to remove.

Tomato Soup.—Boil three pounds of beef in a gallon of water for two hours, or until the liquid is reduced to two quarts. Then stir in one quart of canned tomatoes and stew slowly for three-quarters of an hour or more. Season with pepper and salt to taste and with a small onion sliced thin if desired. Strain and serve.

Fresh tomatoes may be used in summer instead of the canned ones by taking two quarts of the vegetables, peeling and cutting them fine.

Corn Soup.—A delicious soup may be made with corn and chicken. Cut the corn from a dozen ears of green corn and put the fowl, cut into eight pieces, into a gallon of water with the cobs. Boil slowly until the fowl is tender, no matter how long it takes, and then put the corn in and stew for another hour. Take out the chicken and the cobs and season the corn soup to taste. Put in a little rice or wheat flour to thicken, bring the soup to a boil and serve it without straining. You have the chicken left for fricassee or some other fancy dish.

Macaroni Soup.—Three pounds of knuckle of veal, two pounds of lean beef, one pound of lean ham, two onions, one carrot, a turnip, a bunch of sweet herbs, one-fourth of a pound of macaroni cut into fancy shapes usually known as Italian paste, six cloves, three tablespoonfuls of butter and six quarts of water. Mince the meat, break the bones and slice the vegetables. Mix all together. Put the butter in the bottom of a soup pot, then the meat, the vegetables and herbs; put on a tight lid and set the pot where it will warm slowly; at the end of an hour pour off the gravy, increase the heat until the meat begins to brown on the sides of the pot; return the gravy to the rest of the ingredients, cover with six quarts of cold water and boil until the liquor has fallen to four quarts; this should be in four hours. Strain the soup, pressing out all the nourishment and rubbing the vegetables through the sieve; add the paste, or, if you cannot obtain

it, the same quantity of macaroni; season, boil up, skim well and let all cook together for ten minutes.

Cream Combination Soup.—To one small chicken, one veal shank, four stalks of celery, one teaspoon salt, and one-half bay leaf, add one gallon of water. Boil down to two quarts. To one tablespoon butter, to which two tablespoons flour have been added when melted, add one pint thin cream and one quart of stock. Season with salt and pepper and serve with a spoon of whipped cream on each cup.

Juvenile Soup.—Heat brown or white stock to boiling point. For every dish of soup you make, measure an even tablespoonful of macaroni letters, and cook in stock until swelled up and tender. Season well and serve very hot. The letters may be purchased in pound packages. The A B C's furnish a new method by which to persuade children to eat soup.

Green Pea Soup.—Put a quart of tender shelled peas into two quarts of boiling veal or beef broth, and continue boiling ten or fifteen minutes longer. Add half a teaspoonful of sugar and a sprig of mint, then stir in a tablespoonful of butter, and pepper and salt to taste. After another fifteen minutes of boiling strain and serve.

Potato Soup.—This is a very good as well as nourishing soup, nice to serve with a dinner of fish or cold meats. Pare four good-sized potatoes and put on to boil in one quart of cold water. In fifteen minutes, or when half done, drain off the water and cover with a pint of fresh boiling water; add a sprig of parsley or bay leaf, a small onion sliced, and a stalk of celery or quarter of a tablespoonful of celery seed. When potatoes are quite done press through a sieve. Rub two level tablespoonfuls of butter to a smooth paste, with two level tablespoonfuls flour. Scald one quart of milk and add butter and flour and stir over the fire until it thickens slightly. Turn this over the mashed potatoes, stir all over the fire until smooth, season with salt and white pepper to taste, and serve at once. This soup is not good warmed over.

Cream of Celery Soup.—A pint of milk, a tablespoonful of flour, a head of celery, a large slice of onion and a small piece of mace. Boil celery in a pint of water from thirty to forty-five minutes; boil mace, onion and milk together. Mix flour with two tablespoonfuls of cold milk and add to boiling milk. Cook ten minutes. Mash celery in the water in which it has been cooked, and stir into boiling milk.

Add butter and season with salt and pepper. Strain and serve immediately.

Salsify Soup.—Prepare white sauce for soup as follows: One level tablespoonful of butter, one level tablespoonful of flour, one-half teaspoonful of salt, one saltspoonful of pepper, one cup of milk. Combine salt, pepper and flour. Have butter melted in saucepan; stir in flour till smooth, then add hot milk gradually, stirring five minutes. Thin to consistency required. Boil the salsify, slice into pieces one-fourth of an inch thick, and add to the white sauce. Serve hot.

Bean Soup.—Soak a pint of split beans over night. In the morning put them in a granite saucepan with half a pound of pickled pork and plenty of cold water. Let come to a boil; then drain the water off. Repeat this again; then boil steadily for four hours. Pare half a dozen medium-sized potatoes and cook with the beans another hour. Mash all through a colander; season with salt and pepper and serve.

Onion Soup consists of two or three large onions, one and a half pints of boiling milk, three potatoes, one pint of boiling water, half an ounce of butter, pepper and salt. Put the butter in a saucepan, and when very hot add the onions sliced thin. Stir and cook them until they are red; then add half a teacupful of flour. Stir this also until red, watching that it does not burn. Then add the boiling water, pepper and salt, mix them well in and let the mixture boil a minute. Then pour into a porcelain lined kettle and let it stand on the back of the range until almost time to serve; then add the boiling milk and have ready three well boiled mashed potatoes, add to the potatoes a little of the soup at first, then more, until they are smooth and thin enough to pour into the soup kettle; stir all together and season. Let it simmer a few minutes, put pieces of toasted bread cut in diamond shapes into the soup plates; pour the soup over them and serve very hot.

Vegetable Soup without Meat.—Take one carrot, one sweet potato, one turnip, one onion, one parsnip, one white potato, a celery root, one tablespoonful of butter, two tablespoonfuls of rice, two quarts of cold water, one bay leaf, a sprig of parsley, one cup of tomatoes, ripe or canned, and pepper and salt to taste. Cut the vegetables into dice. Put the butter in frying-pan and when hot turn in all the vege-

tables except the white potato and tomato, and fry a golden brown. Then turn butter and all into a soup kettle; add the two quarts of water, rice, bay leaf, salt, celery and tomato; simmer for an hour and a quarter, then add the white potato and boil for fifteen minutes; season and serve.

Crecy Soup.—Clean, scrape, and cut into thin slices enough carrots to make two cupfuls; slice one onion and brown it in a saucepan with one tablespoonful of butter; stir in one tablespoonful of flour and when that is brown add three cupfuls of hot water, one tablespoonful of cleaned rice and the carrots; cook until the carrots and rice are very tender; run through a sieve, return to the fire, add three cupfuls of stock, one-half teaspoonful of salt and one saltspoonful of pepper; simmer for ten minutes, then it will be ready to serve.

Pea Soup.—One cup dried peas, put to soak before breakfast, either soup stock or meat bones and water, one potato, one onion, two cloves, stalk of celery, salt and pepper. Boil three hours, rub through wire sieve and serve.

Peanut Soup.—Put one-half pint peanut butter into a quart of milk, add a few slices of onion. Cook in double boiler for ten minutes. Moisten one tablespoon of corn-starch in a little cold milk, add to hot mixture and stir until thick enough. Add salt and pepper.

Egg Soup.—One quart of milk, soda the size of a pea, a minced onion. Heat in a double boiler. Rub to a paste a tablespoonful each of butter and flour. Stir into the milk. Add one scant teaspoonful of salt, six shakes of paprika. Beat two eggs in a tureen. When the white soup is smooth and cream-like pour it over the eggs, stirring briskly. Serve very hot.

Parmesan Croutons.—Cut out of stale Vienna rolls little rounds of bread the size of a silver half-dollar. Dip them in melted butter, roll in Parmesan cheese and bake them a deep yellow. Put in soup immediately before serving.

FISH

A few words as to selecting fresh fish may be as seasonable as the fish themselves. No amount of skill in cooking can make good a lack of judgment in buying, but a fish in good condition is easily distinguished from one that is not, if a few simple points are borne in mind. The eyes of a freshly caught fish are bright and clear, but

not glassy, and are slightly sunken; the flesh is firm and elastic, and the skin is tight. In all white fish the under side of the fish is of a light yellow shade when fresh and prime, so if this part of the fish shows a blue shade of color it tells that the fish is either out of season or has been out of water too long to be good.

Boiled Finnan Haddie.—Cut the dried fish into cubes, put into a saucepan with a bay leaf, slice of onion, a few whole cloves, and six peppercorns, a sprig of parsley and a little lemon juice or good vinegar. Just cover with boiling water; put cover on and let fish remain just at steaming point for ten or fifteen minutes. Then drain carefully and put in a heated dish, spread over with melted butter, pepper and salt or serve with tomato sauce.

Baked Finnan Haddie.—Place fish in a baking-pan, just cover with milk and water in equal proportions, and place on back of range where it will heat slowly. Let stand for twenty-five minutes, then pour off the liquid, spread with butter, and bake in oven for about twenty minutes. Just before putting in the oven the fish may be covered with sauce made by melting two level tablespoonfuls of butter, adding a cupful of rich milk or cream, a bay leaf, onion, parsley and mignonette pepper, sprinkled with bread crumbs and bits of butter and baked a delicate brown.

Finnan Haddie à la Delmonico.—Pick up half of a finnan haddock and cook in a dessertspoonful of fresh butter, adding a cupful of cream, a hard boiled egg cut in small squares, the yolk of a raw egg and one teaspoonful of grated cheese; thicken with a teaspoonful of flour; season with third of a teaspoonful of salt, nearly as much pepper, a dash of cayenne. Cook slowly for ten minutes.

Baked Fresh Haddock.—Stuff a haddock with a cupful of bread crumbs mixed with two tablespoonfuls of melted butter, a teaspoonful each of chopped onion and cucumber pickles and the yolk of an egg. Season with a quarter of a teaspoonful of salt and three dashes of pepper. Truss the fish in shape of letter S. Dredge with flour, cover with slices of salt pork. Bake until brown. Garnish with fried oyster and lemon.

Deviled Fish.—Boil a fresh haddock until nearly done, then remove from the kettle, lay on a greased tin and spread with the following mixture: one teaspoonful of horse radish, two teaspoonfuls of chutney sauce, one and one-half teaspoonfuls of anchovy essence,

one tablespoonful of butter, one-half teaspoonful of salt, one salt-spoonful of paprika and two teaspoonfuls of French mustard. Mix all into a paste, spread thickly over the fish, sprinkle with bread crumbs and bake ten minutes.

Boiled Salt Codfish.—Soak the fish from early evening until nearly noon the next day, changing it into fresh water at least two or three times, washing off the salt after each time. Two hours before you want to use it put it into very cold water, which will make the fish firm. The other waters in which it has been put to soak should be warm. Boil the fish for half an hour in just water enough to cover it, and after draining it serve on a hot dish with egg sauce poured over it. Salt mackerel can be prepared in the same way.

Fried Codfish.—Skin, clean and remove the heads. Sprinkle with salt and let them drain for an hour. Dip them in egg beaten to a froth and then in powdered crackers and fry quickly in very hot lard.

Mackerel.—Procure a large, fat mackerel. Two days before using it place in water. The night before using cut in two lengthwise and dry on a plank over night. In the morning place in broiler and broil over hot coals. Turn into a hot platter and season with butter.

Smelts.—Put a root of parsley, half a teaspoonful of salt and a dusting of mace into a pint of water and cook ten minutes. Then lay in twelve smelts dusted very lightly with flour. Boil them ten minutes and dish, pouring over them liquor reduced and strained. Serve with bread and butter.

Filling for Fish.—One pint bread crumbs, two tablespoonfuls melted butter, one-half teaspoonful salt, a dash of cayenne and two tablespoonfuls of finely chopped cucumber pickle.

DAINTY DISHES FROM LEFT-OVER FISH

It is comparatively easy to cook and serve fish in dainty and appetizing ways at the first cooking, but when it comes to making palatable dishes from the left-over portions, it becomes a more difficult task, and yet fragments of baked, broiled or boiled fish may be served in ways which will outrank the first serving.

To Prepare Creamed Fish.—Remove all bones and skin from the portions of the fish that may be left, mash them fine and season with butter, salt and pepper; add an equal quantity of well-seasoned

mashed potatoes; moisten well with milk, and bake in a pudding-dish just long enough to brown nicely.

Fish Casserole consists of one cupful of any cold fish, flaked, seasoned and moistened with a little cream, the same quantity of mashed potatoes and two hard boiled eggs. Butter a small mold and put in alternate layers of potatoes, fish and sliced egg. Steam twenty minutes, turn out upon a hot platter and garnish with parsley.

Fish Chops.—To one can of salmon from which the skin and bones have been removed add three rolled, shredded wheat biscuits, one-half of a teaspoonful of salt, one-eighth of a teaspoonful of paprika and one cup of white sauce. Set away to cool. At dinner time shape into chops (about ten), stick a piece of macaroni in at the end for the bone, roll in shredded wheat biscuit crumbs and fry in deep fat until a rich brown. Garnish with parsley and serve, while hot, with quarters of lemon. Cold meat could be used instead of salmon.

ESCALLOPED FISH—VARIOUS RECIPES

Pick into flakes, after removing the skin and bones; make a sauce by boiling some very rich milk, or cream, and thickening it with either flour or corn-starch. Season both the sauce and the fish well, then put a layer of the sauce in the bottom of a pan with a layer of fish over it. Fill in all the material in this way, and over the top place a layer of bread crumbs and a few small lumps of butter. Bake long enough to be sure it is hot all through and a delicate brown on top.

Some scraps of fish, a few mashed potatoes, and a slice or two of rather dry bread do not look like very promising materials to get a dainty dish from; but flake the fish, crumb the bread and then mix a cup each of the fish, potatoes and bread together, season them well, and bind them together with an egg beaten with a little cream. Form the mixture into small cakes and fry in butter.

The pieces may be mixed in the following manner: Flake them, and to each cupful add two lightly beaten eggs and a half cup of sweet cream. Put in cups and steam until firm. The cups in an egg poacher are very nice for this use.

SHELL FISH

Fried Oysters.—Drain and dry the oysters with a clean cloth and dip each one into crushed cracker crumbs. Have butter in the frying-

pan very hot and deep enough to cover the oysters entirely. Drop them carefully into the frying-pan and fry quickly to a light brown.

Instead of cracker crumbs a batter may be used, made from a cupful of the oyster liquor, a cupful of milk, three eggs, a little salt and flour enough for a thin batter.

Oyster Fritters may be made by chopping the oysters fine and stirring into the same batter and frying in hot butter or lard—a spoonful of the mixture for a single fritter.

Scalloped Oysters.—Take a buttered pudding-dish and cover the bottom with a layer of crushed crackers. Moisten this with a mixture of the oyster liquor and milk slightly warmed. Next put a layer of oysters, sprinkled with salt and pepper, with bits of butter laid over them. Fill the dish in this manner with alternating layers, letting the top be covered thickly with crumbs and with an egg beaten into the milk poured over it. Scatter small lumps of butter over the top, cover the dish and bake in the oven for half an hour, after which remove the cover long enough to brown the top. Serve hot.

Escalloped Noodles and Oysters.—Make noodles according to directions elsewhere; cut one-fourth of an inch wide and boil in salted water. Butter a baking-dish. Put in a layer of noodles, then a layer of oysters, cream sauce, and season with pepper and salt. Alternate the noodles and oysters. Finish with noodles on top. Then dot with bits of butter. Bake a light brown. Use one quart of oysters, one cup of cream sauce, one teaspoonful of salt, half a teaspoonful of pepper, one tablespoonful of butter.

Fricassee of Oysters.—Cook one pint of oysters in hot butter until plump. Drain and keep the oysters hot, and add enough cream to the oyster liquid to make one cupful. Cook one level tablespoonful of corn-starch in one tablespoonful of hot butter. Add slowly the hot cream and oyster liquor. Season with one teaspoonful of lemon juice, saltspoonful of salt and dusting of white pepper. Pour the sauce into one beaten egg, add the oysters and heat one minute. Serve in paper cases.

Curry of Oysters.—A small minced onion is fried in a teaspoonful of butter until yellow; into this is shaken a teaspoonful each of flour and curry-powder. This is diluted slowly with a gill each of oyster liquor and cream, and when hot and smooth two dozen oysters are

laid in and allowed to simmer until the beards begin to curl. Serve at once with steamed rice.

Clam Pie.—Drain the liquor from twenty-five clams and carefully look over the clams. If they are very large cut them into halves. (Many people discard all but the digestible, fatty portion.) Add one-half pint of water or enough to make one large quart of liquor. Heat the clams and liquor to boiling point. Rub two tablespoonfuls of flour with two tablespoonfuls of butter, and stir it into the hot liquor. Cook until thick, then turn into a large, shallow baking-dish. Make a biscuit crust of one pint of sifted flour, two teaspoonfuls of baking-powder, one-half cupful of butter, one saltspoonful of salt and enough milk to make as soft a dough as can be easily handled. Roll into a thin crust and cut into long inch-wide strips. Lay these in lattice fashion across the top of the clam pie, pressing firmly to the pan at each end. (A pie made in this way will never run over. It will be ample crust if a large, shallow pan is selected, and the crust will be dry and flaky, not soaked and tough.) Bake in a moderate oven twenty minutes and serve warm with a napkin folded around the pan.

Luncheon Clams.—Cook one dozen clams in one quart of stock (veal or chicken preferred). Season with one tablespoonful of butter, a dash of mace and one saltspoonful of mixed salt and pepper. When the clams are tender drain them. Melt one tablespoonful of butter and blend with it two tablespoonfuls of flour, add the strained clam stock. Boil and pour it over the beaten yolks of two eggs. Place on back of the range. Mince the clams and add them. Clean and butter the clam shells, fill with the mixture, dot with butter and fine cracker crumbs and bake brown. Squeeze a little lemon juice over each and serve.

Clam Squares.—Season fifteen finely chopped soft clams with three dashes of cayenne and the juice of half a large lemon. Add to them the beaten yolk of an egg and enough finely rolled cracker crumbs to make a soft paste. Spread square, crisp wafers with this paste, lay them in a baking-pan and set in oven about ten minutes, or until very hot and the batter quite stiff. Serve hot.

Buttered Shrimps with Eggs.—Pick over and wash one can of shrimps, drain, heat them in a saucepan with one tablespoonful of butter. Heat one-half cupful of milk; beat four eggs, add them to the hot milk; season with one saltspoonful of salt and three dashes

of pepper. Arrange strips of buttered toast on a hot platter, heap the hot shrimps on them and over the shrimps spread the cooked eggs. Serve at once.

CHICKEN

One thing usually available, either in town or country, is a fat, plump chicken. Just what value this fact possesses, perhaps, is not always appreciated, for few people realize how many delicious and wholesome dishes may be made with a good chicken for the foundation. A capon is to be preferred for roasting as well as for croquettes and dainty minces of every kind, when it is desirable to have a large quantity of breast meat. These birds bring considerably more per pound than other fowl; but the breast is nearly double the size and the flesh so much more tender, the proportion of flesh so much greater than in the ordinary fowl that it certainly pays to buy such a bird for roasting and for other purposes when it is desired to have a large quantity of breast meat. For soup and pot pie the ordinary fowl is just as good. For broiling and frying purposes a six months' bird is desirable. For fricassee, chicken à la marengo, supreme chicken, or any dish where the breasts and legs are used separately, take a year old chicken.

Chicken à la Baltimore.—Singe, draw and wash a nice, plump chicken of about three pounds; cut into eight pieces; wipe them dry. Mix one even tablespoonful of salt with one teaspoonful of pepper and rub the seasoning over each piece, then dust with flour. Have one egg well beaten in a soup plate, dip each piece of chicken in this, roll in fresh grated bread crumbs; lay the pieces in a thickly buttered pan, pour over them one ounce of melted butter, cover with buttered paper. Place the pan in a medium hot oven and bake until tender—about forty-five minutes. Put the chicken feet for a minute into boiling water; take them out and remove the skin; put the feet, neck and giblets in a saucepan, cover with cold water; add half a teaspoonful of salt; as soon as it boils up add one small onion; cover and cook gently for a hour, then strain the broth. When chicken is done make sauce as follows:

Melt three level tablespoonfuls of butter in a saucepan; add three level tablespoonfuls of flour, stir and cook until it bubbles, then one and one-half cupfuls of the broth; season with half an even

teaspoonful of salt and a quarter of a teaspoonful of nutmeg. Cook five minutes. Then draw saucepan to side of the stove. Beat the yolks of two eggs with half a cup of cream and add slowly to the sauce, and just before serving add one tablespoonful of lemon juice. Strain the sauce onto a hot platter. Lay the pieces of chicken over the sauce and garnish with mock oysters.

To Make Mock Oysters.—Take half a pint of canned corn or fresh green corn cut from the cob, add beaten yolks of two eggs, a quarter of a teaspoonful of salt, two tablespoonfuls of flour and the whites of the eggs beaten to a stiff froth. Put a tablespoonful of butter in a frying-pan and when hot drop a small tablespoonful of the mixture into the fat in shape of an oyster; fry a light brown on both sides. Lay in a circle around the dish of chicken with thin, crisp slices of bacon.

Spring Chickens Deviled Are Delicious.—Singe, draw and wash a pair of spring chickens and split through the back; season well with salt and pepper; crack the bones between the first and second joints and flatten them out nicely. Lay them in a roasting-pan with two thin slices of pork over the breast of each chicken, and pour two ounces of melted butter over them. Place in a medium hot oven and cover with buttered paper. Bake twenty minutes, basting frequently with their own gravy. Remove the paper, add one gill of hot broth and bake until the chickens are done, which will require about forty minutes. Serve with a white giblet sauce and French fried potatoes.

Fried Chicken—The Easiest Way.—Cut the chicken into small pieces, roll each piece in a mixture of salt and pepper, and then in flour, and drop it into a kettle of boiling lard, just as you fry doughnuts. Do not put the chicken in until the lard boils, then keep it boiling, but be careful not to let it burn. Spread several thicknesses of brown paper on the bottom of the oven, and drain the chicken on that when it is cooked, then serve it hot.

In preparing chicken in this way very little lard is used, and what is left may be made just as good as new. Let it stand until it can be drained from the sediment, then return it to the stove in a clean kettle and add several slices of raw potato. Remove the potato when it is done and the lard will be as nice for most purposes as if it had not been used for frying chicken.

When frying chickens after they are of ordinary size dredge with

salt, pepper and flour; place the pieces in a bread-pan with a liberal amount of grease fairly hot. Slice thick two or three onions over top of chicken; spread the slices all over the top; place a larger bread-pan over all, and put in the oven and keep a slow fire. The chicken will need turning but once. This way fries it much more thoroughly than the old way on top of the stove in a spider, and it never burns if a proper fire be kept.

A New Way of Cooking Chicken.—Dress, joint and salt, as for frying, a young chicken. Place in a skillet and cover with good, sweet cream. Cover closely and cook, not too fast, until done, turning when done on one side. It is delicious prepared in this way.

To Pan Chicken.—Cut the chicken up as for fricassee. Put it into an ordinary baking-pan; dust with pepper, partly cover with water and place it in a very hot oven. Baste frequently. When it is half done add a teaspoonful of salt. When quite done dish and serve with a brown sauce made from the water in the pan and browned flour.

Chicken Fricassee with Rice is a favorite dish among the French. The chicken is cut in the ordinary way, and into the pot with it are put a slice of onion, two slices of lemon and just enough water to boil it slowly. When the fowl is nearly done, half a cupful of rice that has been thoroughly washed and rinsed is put into the kettle and allowed to cook. There are people who prefer the fat of the chicken to give richness. If the chicken fat is desired it should not be removed from the meat. If, however, butter is preferred, the fat should all be taken off and butter added just before serving. Another way to incorporate the butter is to fry the uncooked meat in it without browning before it is boiled. When the fricassee is served rice and meat are placed together on the platter with the gravy.

Chicken Hollandaise.—One and one-half tablespoonfuls butter, one teaspoonful finely chopped onion, two tablespoonfuls corn-starch, one-third cup finely chopped celery, one-fourth teaspoonful of salt, one teaspoonful of lemon juice, few grains paprika, one cup cold cooked chicken cut into small cubes, the yolk of one egg, and one cup chicken stock. Cook butter and onion five minutes, add corn-starch and stock gradually. Add lemon juice, celery, salt, paprika and chicken; when well heated add yolk of egg slightly beaten, and cook one minute. Serve with buttered graham toast.

Giblet Sauce.—Cook the giblets in a very little water, chop very fine, then mix with a pint of boiling water, add to it the chopped giblets, the gravy in the pan, and thicken with corn-starch. Pour into the gravy boat, and when sent to the table drop in a piece of butter.

Chicken Croquettes.—Fry a small onion in two tablespoonfuls of butter until it is slightly browned, then remove it and add to the butter a pint of freshly chopped chicken, a scant cupful of boiled rice, a tablespoonful of chopped parsley, a little lemon peel, salt, thyme and white cayenne pepper. When thoroughly heated remove them from the stove and add three tablespoonfuls of cream and a well beaten egg. Mix it all thoroughly together, then let it stand until cold. When cold add another egg, or two, if the mixture is at all dry, for it must be as moist as it can be worked. Make it into little rolls about three inches long and an inch thick. Dip them into crumbs and fry them in the grease obtained from fried pork until they are a nice brown. If these rolls are hard to manage the mixture can be made into flat cakes instead. This makes a nice supper dish, or a side dish for an elaborate dinner.

Chicken Panada is made in the following manner: Take a full grown chicken, clean it and allow it to cool, then put it into a kettle with three pints of boiling water, a teaspoonful of salt and a very little pepper. Boil slowly until the meat is almost ready to drop from the bones, then set away for three or four hours—chicken and broth in separate dishes—until it becomes cool. Every particle of grease is skimmed from the broth. Cut the white meat from the bones and carefully remove all the fat and skin. Chop the meat and afterward pound in a mortar until it forms a smooth paste. Add enough of the broth to this to make it thin enough to drink, and strain through a fine sieve and serve hot with thin slices of toast. This is very palatable and nutritious, and sick people usually are fond of it.

TURKEY

Selecting the Toothsome Turkey.—In making the selection of the turkey for your Thanksgiving dinner, press hard with your thumb on the point of the fowl's breastbone before making the purchase. If the bone is pliable and yielding it is a safe prediction that the heart of that turkey has not fluttered with joy over having escaped the fate of adorning some one's table the last Thanksgiving. If, on the contrary,

the bone is rigid and sharp, it is an equally safe prediction that some of the bird's progeny is on the market that day.

In Making Chestnut Stuffing for Turkey, peel the chestnuts, scald them and remove the brown from underneath the skin. Put them into boiling water; cook slowly for about thirty minutes. Drain and then mash or chop. To one quart add a teaspoonful of salt, a tablespoonful of butter and a quarter of a teaspoonful of pepper. Stuff this into the turkey and finish as you would with other dressings. Truffles or mushrooms may be added.

How to Bake a Turkey.—Ninety-nine cooks out of every one hundred will bake a turkey with the back to the pan, but this is a mistake. The best way to prepare a turkey is to bake it with the breast down. The breast is turned to the bottom of the pan, and instead of being dry and tasteless when it is served is richly flavored and as sweet and juicy as one would care to have it. All the fine flavoring of the turkey, the juice of the dressing, and all the daintier juices flow down towards the breast of the fowl, and when the white meat is served you get the full benefit of every flavor added during the processes of preparing and baking the turkey in addition to the distinctive taste of the fowl itself. It is just as easy to cook a turkey in this way as in any other way. It is no trouble to arrange the fowl in the pan; if you desire to place the fowl on the table before carving it you will find that it will look quite as well as it would if baked in the usual way, and certainly it will taste much better.

Turkey Salmi.—Cut bits of turkey, either light or dark meat, into pieces not more than an inch square. You may add bits of dressing and the minced giblets if liked. Take a cup of gravy from the turkey or of good stock thickened with browned flour, add a teaspoonful of chopped parsley, a tablespoonful of chopped onion; stir in the turkey, of which there should be a pint, add three hard boiled eggs sliced. Let all heat thoroughly. Serve on a platter surrounded by small triangles of bread fried a light brown in nice drippings.

Turkey Molds.—Enough cold turkey or chicken to make two cupfuls, chopped fine. Mix with it one cupful of bread crumbs, one tablespoonful of cream, one teaspoonful of minced or grated onion, two tablespoonfuls of butter, half a teaspoonful of salt and a salt-spoonful of pepper. Beat one egg, stir it into half a cup of milk and

stir into the turkey mixture; put in small buttered cups or muffin-tins and bake twenty minutes in a moderate oven.

Turkey Cream.—Soak an eighth of a box of gelatin in a very little cold water for fifteen minutes, then beat into a pint of whipped cream. Add two cupfuls of the white meat of turkey, ground fine and salted with discretion (a quarter teaspoonful, probably). Beat well and pour into a ring mold and set in a cool spot for a few hours. Garnish with curled parsley. Chicken may be used in a like manner.

MISCELLANEOUS POULTRY RECIPES

Roast Duck with Apples.—Prepare a duck for roasting; wipe dry, rub with two teaspoonfuls salt and half a teaspoonful pepper mixed, inside and out, and lay in a baking-pan; wipe a dozen small sour apples with a wet cloth, cut out the cores without breaking the apples and arrange them around the duck; put the pan in a hot oven and quickly brown the duck, then moderate the heat of the oven and continue the cooking for about twenty minutes, or until the apples are tender, but not broken. After the duck has begun to brown add a teacup of boiling water and baste both duck and apples every five minutes until they are done. Serve on the same dish.

Indian Hash.—Chop fine sufficient cold roasted duck, chicken or turkey to measure one pint. Cut a good sized onion into very thin slices. Pare, core and chop fine one apple. Put two rounding tablespoonfuls of butter into a saucepan, add the onion and apple, heat until brown, then add not more than an eighth of a teaspoonful of powdered mace, one-half of a level teaspoonful of salt, a scant teaspoonful of flour and a rounding teaspoonful of sugar; mix and add one-half of a pint of stock or water; now add the meat and stir constantly until smoking hot; then stand over hot water for twenty minutes. Add two tablespoonfuls of lemon juice and serve in a border of nicely boiled rice.

Chicken Turnovers.—Mere scraps and crumbs of left-over turkey, chicken, duck or goose may be used and made into a delicious dish by the following recipe: Mince the meat fine; to a cupful add a salt-spoonful salt, a few dashes of pepper and one tablespoonful tomato catsup. Add a half cup of water to a half cup of stock or gravy (or use one cup of thin white sauce), and heat until it boils. If former is used thicken with a teaspoonful of browned flour rubbed into one

teaspoonful butter, let it boil up a moment, then add the minced chicken and set over hot water until the batter is made. For the batter beat two eggs until light, mix with one and one-half cups of milk, two cups of flour, one-quarter teaspoonful salt and one teaspoonful baking-powder. Quickly fry into rather large pancakes, having them thin. When a light brown on both sides spread some of the chicken mixture on each and fold like a turnover. Serve hot on individual plates.

Spiced Gibleet Sauce.—Boil the gibleets in three pints of water an hour, or till tender, with six cloves, six allspice, a tablespoonful of grated lemon peel, one-half a small onion chopped, a teaspoonful of shredded Chile pepper, a blade of mace and two saltspoonfuls of salt. Remove and mince the gibleets, and keep hot. Rub together a tablespoonful of butter and two of hot browned flour and stir into the gravy, then strain; boil three minutes.

Larded Guinea Fowls.—Choose two plump birds and after cleaning and trussing, dip the breasts in boiling water for a minute to stretch the skin. With a No. 10 larding needle fill the breast with rows of fine short lardoons of salt pork or bacon. Place a cut onion inside and roast rare about an hour and baste often. Have a brisk oven, then gradually cool off to a moderate heat.

The guinea fowl can be recommended as not inferior to the turkey in flavor. By many epicures it is considered the most delicious and savory of all birds. It is a sort of connecting link between game and domestic fowls and runs wild in the south. The reason for its not being common in the markets in the north is because there is little demand for it owing to ignorance of its value as a meat.

BEEF

Beef Pie.—Lay in a pie dish a few thin slices of onion, then a layer of cold cooked beef cut very thin; dredge with a little flour, pepper and salt; fill the dish with these articles in alternate layers and add to them cold gravy. Scald and peel enough tomatoes to cover the top of the dish; have them of uniform size, and place them close together; spread over them some bread crumbs, salt, pepper and bits of butter; place in the oven and cook until the tomatoes are tender. Veal or mutton may be used in the same way.

Ragout of Beef.—Cut two pounds of the upper round of beef into inch squares; dredge them with salt and pepper and roll them in flour. Put into a saucepan some butter and some drippings, or a little suet, and let it fry out, using enough only to cover the bottom of the saucepan. When the grease is hot turn in the pieces of meat and let them cook until well browned on all sides. Watch and turn them as soon as browned. Then draw the meat to one side of the pan and add a tablespoonful of flour. Let the flour brown and add a cupful of stock or water and stir until it comes to the boiling point; then add a teaspoonful of salt, half a teaspoonful of pepper and half a teaspoonful of kitchen bouquet, and one tablespoonful of chopped onion. Cover the saucepan and let it simmer, not boil, for an hour. If desired, a tablespoonful of wine can be added just before serving.

Boeuf aux Liqueurs.—One and one-fourth pounds of beef, two small onions, two small carrots, eight potatoes, salt and pepper, one medium-sized turnip, one spray of parsley, one stalk of celery, one cupful canned tomatoes. The inside of the flank, a piece from the shoulder, or the tender side of the round may be used for this dish. If the meat is entirely lean have the butcher add a piece of fat. Cut the meat into inch squares, peel the onions and cut them into eighths. Scrape the carrots lightly, removing the peel or skin, and slice; peel and slice the turnip, cut the celery and parsley into inch lengths, place all these ingredients together in a granite kettle, add the tomatoes and sufficient water to two-thirds cover them, taking care not to have too much, as this is used in serving. Cover the kettle and stew very gently for two hours; add the peeled potatoes to cook during the last half hour, and when they are tender enough to pierce with a fork thicken the gravy. Mix a tablespoonful of flour in two tablespoonfuls of cold water and rub smooth; stir enough of this into the stew to thicken the gravy to the consistency of cream, add salt and pepper. Serve on a platter very hot.

Frizzled Beef.—Have one pound of smoked or dried beef sliced very thin; put in a frying-pan, cover with cold water, set it on the back of the stove and let it come to a very slow heat, allowing it time to swell out to its natural size, but not to boil; stir it up and drain off the water; melt one ounce of sweet butter in a frying-pan and add the wafers of beef. When they begin to frizzle or turn up break over

them four eggs; stir until the eggs are cooked; add three shakes of white pepper and serve on slices of buttered toast.

Chipped Beef with Eggs.—Put the required quantity of dried beef through a meat chopper. For each two ounces allow a cupful of tomato liquor, one-fourth of a cupful of grated cheese, a little onion juice, a dash of cayenne, two tablespoonfuls of butter and three beaten eggs; stir all together and cook until the eggs are flaky.

Hamburg Steaks.—Chop one pound of lean raw meat very fine, remove all the fiber and to the mince add one-half teaspoonful of onion juice, one-half teaspoonful of salt, one-fourth teaspoonful of pepper, a dash of nutmeg, one egg; form into small balls and flatten. Dredge them with flour and sauté them in butter; place them on a hot dish and spread with maitre d'hôtel butter, or make a thick brown sauce by adding a tablespoonful of flour to the butter used in the sauté pan. Let it brown, then add slowly a little soup stock; season with salt and pepper, lemon juice or a little Worcestershire sauce. Drop a teaspoonful of sauce on each cake without spreading it.

Beef Hash.—Chop the meat fine, add an equal quantity of cold boiled potato chopped and a half teaspoonful of onion juice; mix thoroughly, brown in melted butter or drippings, add enough boiling water to moisten and cook for five minutes. Serve the hash on buttered toast.

Beef Balls.—Mix with one can of potted beef a minced onion, one tablespoonful of boiled and chopped parsley, a half cupful of bread crumbs; season with salt, pepper, nutmeg and grated lemon peel; moisten with beaten egg, form into balls, roll in flour and fry. Serve with a brown gravy.

Mock Duck.—Take a flank steak or two pounds of round steak and spread quite thickly with a dressing prepared from stale bread as for roast fowl, using sage, melted butter, salt and pepper for seasoning. After spreading the meat with the dressing roll into a neat roll, and sew with a strong cord. Have the frying-pan or kettle hot, and put in the meat dry and sear well on both sides to prevent the juices from escaping. Then add one cupful of boiling water; cover closely and keep at the simmering point until the meat is tender. Add salt when about half cooked. When tender uncover and brown on both sides. Make a gravy by adding a small quantity



THE LISTENING JOAN OF ARC.

The soldier maid of France is seen here, amid her sheep, rapt in admiration as (according to her own firm belief and testimony) she gazes on those heavenly figures and listens to their voices, commanding her to leave her peaceful meadows and save her country from English dominion.



A MARTYR'S DAUGHTER.

True love overrides all fear, as this picture so graphically illustrates. Here is filial love—the truest and purest of all—set against religious fanaticism. Though spears and knives may mutilate her body, her soul will triumph.

of boiling water to the pan thickened with a tablespoonful of flour, which has been stirred smooth with a little cold water.

If preferred potatoes, with jackets removed, may be added a half hour before the meat is done. Allow them to brown with the meat, and serve without the thickened gravy.

Mock Duck.—Two pounds of sirloin steak, four slices of stale bread, six onions chopped fine, one teaspoonful of sage, one egg, teaspoonful of chopped salt pork. Soak bread until soft, add onion, pork, sage and lastly the well beaten egg. Spread on steak, roll, tie securely and bake one hour. Good hot or cold.

Pot Roast.—Take four or five pounds of shoulder clod or rump. Trim nicely and sear in the hot kettle as for mock duck. Add a small quantity of boiling water and cover closely, adding more boiling water as needed. Salt when the meat has cooked about an hour, and cook very slowly for four or five hours or until tender. Then brown and serve with a thickened gravy as for mock duck.

Meat Pie.—If any cold meat is left from the roast a very nice meat pie may be made as follows: Chop meat fine and remove all skin. Season with pepper and salt and add one-half cup boiling water. Put the meat in a deep pie-pan and cover with a thin crust made as for baking-powder biscuit, only somewhat richer, and using no bottom crust. Bake until a rich brown. Turn the pie on a platter with the crust on the under side. Pour over all a sauce made in the following manner: Take one large tablespoonful of butter and make hot in a granite saucepan. Add one large tablespoonful of flour and cook smooth. Add very slowly boiling water until a creamy consistency is reached. Season with salt and pepper.

Old-fashioned Pot Pie.—Old-fashioned pot pie is made by placing a layer of pork cut into small squares in the bottom of an iron pot; then comes a layer of sliced potatoes, then one of very thin dumplings, and then more pork, potatoes and dumplings, with a layer of pork on top. Each layer must be seasoned properly as it is added. Cold water is then poured into the kettle until it just covers the top layer of pork, then a cover of rich biscuit dough is tucked down over the whole. The pot lid is fastened down so as to keep in all the steam, and the pot pie is allowed to cook for just two hours on the top of a very hot stove.

Another Way to Make It is to take a pound each of lean pork and

lean beef, cut into dice and put into cold water over a moderate fire. When nearly done season it, add half a cupful of butter, two tablespoonfuls of rice, and six or eight potatoes cut into quarters. Pour in enough boiling water to cover all these ingredients, season it to suit the taste, and then add another pint of boiling water for the dumplings. A few strips are cut from very rich biscuit dough and put in with the potatoes; then the remainder of the dough is tucked down over the whole like the cover of a chicken pie. The pot should be closely covered while this pie is cooking, and it is a good plan to spread a clean cloth over it before putting on the lid, thus preventing the steam from falling back in drops on the top crust. When this crust is done the pie is ready to serve.

All kinds of meat may be utilized in making these pies. This is an exceptionally nice way to cook poultry that is no longer young. Then this recipe has another advantage in that more than one kind of meat may be used, and no one will dream that it was not done purposely. Bits of meat may be utilized in this way that would not have been sufficient for a meal if cooked in other ways. It may be flavored with onions or sweet herbs.

MUTTON

Boiled Shoulder of Mutton.—Procure two pounds and a half of shoulder. Wipe with damp cloth, tie up in a piece of cheese-cloth dusted with flour, place in a kettle and cover with boiling water. Cook rapidly for five minutes. Then add one teaspoonful of salt, dash of pepper, remove to the back of the stove and simmer for an hour; then add six roots of carrots boiled until tender and sliced into rounds. Make a paste of a tablespoonful each of butter and flour, stir into it one cupful of the boiling mutton stock, season with a pinch of mace and a tablespoonful of chopped parsley, add to the carrots. Serve the meat in the center of the dish, the carrots around as garnish.

Neck of Lamb Stew.—The neck of lamb, though not a favorite cut, is very rich in nutritious juices. To prepare the stew separate the lean meat carefully from the bones, rejecting all fat. Set the lean meat away and put the bones over to boil, adding cold water enough to cover them. Let them simmer for two hours. Then take the meat, dredge it with flour, season with one-half teaspoonful of salt

and a good dash of pepper; fry it with three small onions. Strain the stock from the bones, cover it, add a bay leaf, a spray of soup celery, two sprays of parsley, a sprig of thyme, half a teaspoonful of salt and two cloves. Simmer together for an hour; then skim out the bay leaf and other herbs, and serve the lamb with a garnish of dumplings made by adding a cupful of milk to a pint of flour, in which half a teaspoonful of salt and two level teaspoonfuls of baking-powder have been mixed. Drop these dumplings over the top of the lamb stew, cover the pot closely and then cook steadily without uncovering for ten minutes.

Mutton Ragout.—Cut the mutton into two-inch lengths (three cupfuls in all), season with a small teaspoonful of salt and one saltspoonful of pepper and dust lightly with flour; place two tablespoonfuls of butter in a pan, heat very hot and place in the meat; brown well, shaking often; draw the pan to the back of the range; lift the meat out with skimmer and place it on the serving dish; take one medium-sized onion and a sprig of parsley minced; cook for five minutes and add one cupful of milk; when hot add a saltspoonful of salt and two tablespoonfuls of flour stirred to a paste with a little cold water (about one cupful), cook for twenty minutes and stir frequently to prevent scorching; add a pint of chopped oysters ten minutes before serving, then pour it over the mutton and serve at once. The oysters must be drained well before adding to the gravy. Serve with grated cheese.

VEAL

Veal Ragout.—Cut three pounds of lean raw veal into inch square pieces; roll in flour and fry to a light brown in butter; add a quart of boiling water, one peeled and sliced onion, one carrot sliced, one teaspoonful of salt, a dash of cayenne and three cloves; cover closely and simmer one hour. Turn from the kettle, strain the liquor and return this and the veal to the kettle; add more water and salt if necessary, and when it boils, enough peeled potatoes for dinner, and finish cooking. Serve in a warm dish with potatoes around the veal and with the liquor thickened for a sauce.

Veal Pot Roast.—Remove the bone from a fillet of veal and fill the cavity with a force meat made of a little minced salt pork and stale bread crumbs, seasoned with salt, pepper and a little thyme or

summer savory, and fasten securely with skewers or cord. Put some thin slices of salt pork over the fire in a Scotch bowl or frying-pan and when the fat flows freely brown the veal nicely on both sides; then cover with boiling water and simmer until tender, removing the cover half an hour before it is done. Serve on a hot platter with stewed green peas around it and accompanied by a brown sauce made with the boiling liquor. Parsley (minced) is a delicious flavor for both the stuffing and sauce.

Stewed Knuckle of Veal.—Have the butcher cleave it in several places, and put it to boil with a small carrot, one turnip and one onion, all sliced, and a tablespoonful of well washed rice. Pour over it two quarts of boiling water; let it cook slowly two hours and a half. Half an hour before it is done add a teaspoonful of salt. When done remove the meat from the bone, lay it in a hot dish and make the following sauce to pour over it: Melt together one tablespoonful each of butter and flour; let them cook together one minute, stirring all the time; then take a half pint of the liquor in which the meat was cooked and pour quickly over the butter and flour; then stir in one beaten egg and a few drops of lemon juice, or a teaspoonful of chopped pickled cucumbers. The liquor left may be used for a rice soup for the next day.

Shin of Veal Stew with Potatoes and Dumplings.—Use a shin of veal weighing about five pounds. Wash it and cut the meat from the bones into cubes of good size. Put three tablespoonfuls of butter or pork fat in a stew-pan and when melted add two tablespoonfuls each of minced onion, carrot and celery and cook slowly for ten minutes; then take out the vegetables and put in the meat, over which has been sprinkled three teaspoonfuls of salt and one-third of a teaspoonful of pepper. Stir over the fire until the meat browns, take it out and put in two heaping tablespoonfuls of flour; let it brown slightly, then add three pints of boiling water; let it come to a boil, then put in the meat and vegetables. Cover the stew-pan and set back where the contents will only simmer for three hours. At the end of that time add one pint of potato cubes, draw the pan to a hotter part of the stove and cook for half an hour longer.

Veal Pâté.—Chop three and one-half pounds of veal very fine with a slice of fat pickled pork; add six crackers rolled fine, three tablespoonfuls of melted butter, two beaten eggs, a tablespoonful of pul-

verized sage and a slightly heaped teaspoonful of pepper. Mix well, pack in a buttered, deep, square tin, rub the top over with melted butter and sprinkle with cracker crumbs. Cover, bake two hours, remove the cover and brown. Serve cold in thin slices with a garnish of celery tops.

Jellied Veal.—Take three or four pounds of veal, boil till very tender, pick it up very fine, put in a mold, season with pepper and salt to taste, put over a layer of hard boiled eggs sliced thin, add the water in which the veal was boiled, set in a cold place till ready for use, turn out and slice thin.

Veal Scallop.—Two cups of cooked veal chopped very fine and seasoned with salt and pepper. Fry two teaspoonfuls of minced onions in two tablespoonfuls of butter until yellow; add two cupfuls of strained tomato, salt, pepper and a teaspoonful of sugar; when it boils add one-half a cupful of stale bread crumbs and stir smooth. Fill a buttered baking-dish with alternate layers of veal and tomato; sprinkle buttered crumbs over the top and bake twenty minutes.

Veal Patties.—Make a cream sauce of half a pint of milk, one tablespoonful of flour and one tablespoonful of butter; remove from the fire and season with one-fourth of a teaspoonful of salt, salt-spoonful of pepper, one tablespoonful of mushroom catsup, add the beaten yolk of an egg and a pint of finely chopped cold cooked veal. Fill the empty pastry shells which have been baked, with the mixture, brown in the oven and serve hot with or without a tomato sauce.

Creamed Veal Croquettes.—Cold veal chopped fine; season with pepper, salt, very little mace and a dash of grated lemon rind. Put together with thick white sauce, let stand until cold, roll in egg and cracker crumbs and fry in hot lard.

Mock Chicken Olives.—Cut slices from the leg or round of veal and divide into small pieces suitable for serving. Make a dressing with one cup of bread crumbs, one teaspoonful each of chopped onion and summer savory, one tablespoonful melted butter and salt and pepper. Spread each piece of veal out flat, lay on one tablespoonful of the dressing, roll or fold together and fasten with small wooden skewers. Place in a roasting-pan, dredge with flour and pour over one cup of boiling water. Bake until the meat is perfectly tender and nicely browned on one side, basting often. Place the olives on a heated

platter and make a sauce with the contents of the pan, one cup of boiling water, seasoning, and a little browned flour.

Cold Pressed Veal.—Boil shank of veal until very tender, salt and pepper. Remove veal from bone, chop fine, add two teaspoonfuls of mustard, one tablespoonful melted butter. Place in a dish, then pour on the stock; set away several hours. When thoroughly chilled slice and serve.

Veal Sausage.—One pound lean veal, one-half pound fat salt pork. Chop and grind as you would sausage meat. Add salt, pepper, sage—a pinch of each. The result will be a delicious sausage, far preferable to veal or pork cooked separately.

PORK

Ham and Eggs in a New Dress.—A good dish to serve when fresh meat is not to be had is ham and eggs in a new dress. Boil the eggs twenty minutes, then remove the shells and cut a thin slice from each egg so it will stand upright. Then remove the yolks, grate them and put them where they will keep hot. While the eggs are boiling, boil some bits of ham, cut into dice, unless same is already boiled. This is chopped fine, when done, seasoned and made into a dressing by the addition of bread crumbs and raw eggs. The eggs are stuffed with this mixture, then a rich cream gravy is made and poured over them and the grated yolks sifted over all. The dish is then set in the oven until the eggs have become thoroughly heated through.

San Juan Ham and Eggs.—Boil one coffeecupful of rice. When done drain and have broiled five small slices of ham (or bacon, if preferred), arrange the ham in center of platter with border of rice and then a row of deviled eggs.

Creamed Potatoes and Ham.—Pour one cupful and a half of boiling water over one quart of sliced potatoes; add an even teaspoonful of salt and cook until tender, adding a little more boiling water if needed. When cooked stir in one cupful of rich milk, one tablespoonful of butter and one and one-half cupfuls of cold boiled ham, cut in very small pieces or chopped. Cover and let simmer gently for five minutes and serve, sprinkling half a saltspoonful of white pepper over it after it is in the dish.

Potted Ham.—Mince some ham, mixing lean and fat together, pound in a mortar and season with cayenne, mace and mustard. Put it in a dish and place in the oven for half an hour. Afterward pack into pots or little stone jars. This will be a convenient mixture to serve at luncheons.

Ham Has a Much Better Flavor if it is boiled for an hour, and then baked two hours, with brown sugar sprinkled over it for the last fifteen minutes.

Pork Cakes.—Chop raw, fresh pork very fine, add salt, pepper, one chopped onion, half as much stale bread crumbs as there is meat, soaked until soft, two well-beaten eggs and a teaspoonful of finely powdered sage; mix well together; make in little oblong cakes and fry in boiling lard. Serve with sliced lemon if you like it.

Sausage.—First buy the sausage in bulk, mold it in shape with spoon or cut in slices; put it in a covered baking-pan, and put in the oven with rather a gentle heat. Let it cook not less than half an hour, turning it once to insure its cooking evenly. It will be better if you cook it slowly and longer. When properly done it will be cooked delicately all through with no crust, but so tender as to almost melt in the mouth. If you will once try this way of cooking sausage you will never go back to the frying-pan, sputtering grease all over the stove.

Creamed Bologna.—Get the small size, not more than an inch in diameter; steam for half an hour; remove skin; cut in finger lengths; divide these in quarters lengthwise, place on platter and pour over them a plain white sauce.

Apple Garnish.—Take four nice flavored apples, slice two of them; after paring, cut two into eighths, remove cores. Fry with the sausage until a delicate brown. Put sausage in middle of the platter and the apples around them.

BREAKFAST DISHES

Breakfast Novelty.—Chopped cold meat well seasoned, wet with gravy if convenient. Put it on a platter, then take cold rice made moist with milk and one egg, season with pepper and salt. If not sufficient rice add powdered bread crumbs; place this around the platter quite thick; set in oven to heat and brown. Makes a delicious breakfast dish.

Breakfast Sandwiches.—Toast ten very thin slices of bread and butter them. Build the toast in sandwich form by placing a slice of broiled bacon between two slices of the toast. Mince one cupful of cooked beef or chicken quite fine and heat it in two cupfuls of seasoned gravy or cream sauce. Mask the top of the sandwiches with this and serve on warm breakfast plates.

Senator Hanna's Hash.—Take equal portions of tender boiled corned beef and mealy boiled potatoes. Cut the potatoes into small cubes and the meat as fine as possible. Mix thoroughly with these a small onion, chopped very fine; a slice of onion is often sufficient. Butter a hot frying-pan and turn into it the chopped materials. Press into the center of the mass a clove of garlic, wrapped in a piece of salt pork or mild cured bacon. Set over a moderate fire, cover and let cook, adding a small quantity of water, if moist hash is preferred. When heated through, stir, remove the garlic and give the whole round shape. Let stand in the oven until browned underneath, then carefully slide on a serving-dish. While the hash is cooking cut one or two Bermuda onions into thin slices and fry until crisp in deep fat. Use these as a garnish for the hash (or omit, if preferred). Serve with lemon quarters.

West Indian Hash.—Put into a stew-pan slices of mutton or beef, with some good stock. The meat must be free from fat, gristle or skin. Season with a slice of lemon without rind or seeds, salt and pepper. Cover and simmer, being careful not to let it boil. Rub smooth in a dish the grated yolks of two hard boiled eggs and add one large teaspoonful of mustard, and thin with gravy from the pan. Pour into the pan, take out the lemon and allow the hash and sauce to stew together for five minutes. Serve at once.

German Hash.—One cupful each of chopped boiled or roast beef, chopped tart apples and chopped boiled potatoes, one teaspoonful salt, a pinch of cayenne pepper. Put three tablespoonfuls of butter or drippings in a frying-pan; when it is hot add one small onion chopped very fine and cook a few minutes, but do not let it brown; then add the other ingredients and stir often over a hot fire until partly brown. Serve very hot.

Indian Sandwiches.—To two parts of cooked veal or chicken allow one part of cold boiled tongue, and to each cupful of the mixture, measured after putting through a chopper, add one tablespoonful of

melted butter, one teaspoonful of essence of anchovy and one-half teaspoonful of lemon juice; butter and cut the bread as directed, toast each slice golden brown, spread with the filling while hot and put together. Serve cold.

Meat or Fish Timbales.—Mince the odds and ends of fish or meat, add an egg, seasoning, some sauce or gravy, fill your timbale molds, set them in a pan of hot water and bake. Turn out on a platter and pour tomato sauce over.

Casserole of Rice with Calves' Brains.—Make a cupful of gravy from the bones and stuffing of a roast chicken; cool and skim it. Soak a cup of rice two hours in two cupfuls of cold water. Drain this off, put the rice into a porcelain-lined kettle with the gravy previously heated to the boiling point and a cupful of hot water. Season with salt and pepper and cook until tender, shaking the pan to keep it from sticking. When the rice is nearly dry make a mound of it in the middle of a dish. Sprinkle it with grated cheese and brown. Boil the calves' brains ten minutes. Blanch in cold water, dry them and beat them up with an egg, pepper and salt and a very little flour. Fry by the spoonful in hot fat, drain and lay around the rice.

Casserole of Rice and Meat.—Boil one cup of rice until tender. Chop very fine half a pound of any cold meat, season highly with half a teaspoonful of salt, half a saltspoonful of pepper, one saltspoonful of celery salt, one teaspoonful of finely chopped onions, the same amount of finely chopped parsley and one saltspoonful each of thyme and marjoram. Add one beaten egg, two tablespoonfuls of fine cracker crumbs and moisten with hot water or stock enough to pack it evenly. Butter a mold, line the bottom and sides half an inch deep with rice, pack in the meat, cover closely with rice and steam forty-five minutes. Loosen it around the edge of the mold, turn it upon a platter and pour over it a rich tomato sauce.

TRIPE

Tripe Should Be Soaked for Several Hours, then scraped clean, put into salted water, and it should be simmered two or three hours until it is like a jelly. Drain off the water and put aside the tripe until ready to use. Put a tablespoonful of butter into a saucepan, and when hot add a teaspoonful of flour and cook for a few minutes, but do not brown; then add slowly one cupful of milk and stir until smooth; add

half a teaspoonful of salt, a dash of pepper and half a teaspoonful of onion juice; then add one cupful of the boiled tripe, stir until the tripe is heated and serve immediately.

Tripe with Brown Gravy.—Cut the tripe into small pieces, roll in flour and fry in hot lard; pour off part of the fat, and of the remainder make a rich brown gravy; pour over the tripe. This is acceptable to serve with baked potatoes. An excellent fricassee can also be made of tripe. Make a cream sauce with a tablespoonful each of flour and butter and a cupful of milk; cut the tripe into slices and season with salt, pepper and lemon juice; then brown in butter. Turn the sauce over it, simmer for five minutes and serve with small boiled potatoes.

Tripe Fried in Batter.—Beat one egg slightly, add four tablespoonfuls of water, one tablespoonful of vinegar, half a teaspoonful of salt, a few shakes of pepper and flour enough to make a drop batter. Wipe the tripe dry, cut in two-inch pieces, dip in the batter, and fry in deep, hot fat.

SQUIRRELS AND RABBITS

Squirrel Pot Pie.—Clean and cut into neat pieces three small or two large squirrels; roll in flour and brown in bacon fat (using a slice of bacon), then draw to one side of the saucepan and fry brown a small minced onion in the remaining fat. Add quarter of a lemon sliced thin, one and one-half teaspoonfuls of salt, one-third as much pepper and one-third cupful of sharp cider; pour on boiling water to cover; cover closely and stew an hour. Make a nice biscuit dough and cut into dainty rounds, lay on top of the squirrel and boil fifteen minutes, covered closely. Pile the meat in the center of a hot platter, arrange the dumplings around it, thicken the gravy and pour over the whole, then send to the table.

Young Rabbit or Squirrel Pie.—Wash and wipe dry two young squirrels or rabbits; melt two ounces of butter in a saucepan, add two minced shallots, a half teaspoonful of minced marjoram, a pinch of thyme, a tablespoonful of chopped parsley. Cut up the rabbits neatly, roll them in two level tablespoonfuls of flour in which a teaspoonful of salt and a saltspoonful of white pepper have been mixed; put them into the frying-pan and brown lightly and quickly in the seasoned butter, add a cupful of chopped celery and turn in a pint of well-

seasoned, thin, brown gravy from either veal or chicken, the juice of half a lemon and a saltspoonful of grated orange peel. Let simmer covered, for twenty minutes, turning the joints once in awhile. Have previously prepared a nice flaky crust; roll a thin strip and fit it around the inside of an enameled pan (do not line the bottom), place the hot rabbit neatly in, mixing through it a cupful of chopped mushrooms and a dessertspoonful of minced parsley; pour over the hot gravy, of which there should be sufficient to nearly cover the meat; immediately place on the upper crust and trim to fit neatly, first having moistened the rim of the pastry lining, press lightly to make the edges adhere, decorate with a few diamond-shaped pieces of pastry moistened on the under side and placed regularly about the edge, or use instead a twisted strip. Cut out a small round from the center and insert a thick, white paper funnel to serve as a vent for the steam and keep the gravy from running over the edge, put without delay in a brisk oven and bake until a light brown. This may be served hot or cold.

Baked Rabbit Stew.—Wash and cut the rabbit into small pieces. Put a large tablespoonful of pork drippings in a spider over the fire. When hot put in the rabbit and brown. Then cover with boiling water, add a small onion cut fine, half a teaspoonful of salt, a stalk of celery cut into small bits, a slice of raw salt pork cut into inch pieces, a saltspoonful of pepper, two tablespoonfuls of tomato catsup. Cover and have the oven hot enough for it to simmer, not boil fast.

Spiced Rabbit.—Thoroughly clean a young rabbit; soak in cold salted water one hour; cut into joints. Pour mild vinegar over, let it remain over night. Then put two ounces of fresh butter in a granite stew-pan; add a sliced onion, one bay leaf, six peppercorns, a stalk of celery and four cloves. Lay the pieces of rabbit on this. Add part of the vinegar the meat was soaked in and enough water to cover. Stew until tender. Brown two tablespoonfuls butter with two of flour and add to the gravy. Add a little more salt if needed, but each piece of meat should be sprinkled with salt before it is cooked.

Roast Belgian Hare.—Buy a young hare. It will come skinned; have the butcher chop off the feet. Singe the animal and put it into clear, cold, salted water, and let it remain several hours, or else rub the flesh well with salt and cleanse thoroughly. Wipe dry and rub inside

and out with salt and dust lightly with pepper. Make a bread crumb stuffing, flavoring it with sage or celery. Sew the filling in and rub the outside skin with soft butter and flour. Truss and place in a roasting-pan with a pint of boiling water, cover closely and roast two hours. Baste often and remove cover to brown at the finish. Garnish with lemon slices.

SAUCES FOR MEAT AND FISH

Egg Anchovy Sauce.—Cook together a tablespoonful each of butter and flour and a teaspoonful of anchovy paste until all bubbles, pouring upon them a half pint of milk. Stir until the sauce thickens, then add to it a hard boiled egg chopped fine and one-fourth teaspoonful of salt. Pour over the fish and send to table.

Butternut Sauce.—One tablespoonful of butter; melted in stew-pan; add one tablespoonful flour and stir to a smooth paste; add one-half teaspoonful salt, one-half teaspoonful paprika and two teacupfuls milk; boil four or five minutes, stirring constantly. Add three-quarters of a cup of butternut meats and one teaspoonful of Worcestershire sauce. A delicious sauce for fish.

Beurre Noir.—Put two tablespoonfuls of butter in a frying-pan; when melted add one tablespoonful of vinegar, one tablespoonful of chopped parsley, one teaspoonful of lemon juice, one-half teaspoonful of salt, one-quarter of a teaspoonful of pepper; boil up once and turn over the fish.

Onion Sauce.—Put the required number of peeled white onions in cold water and let them come to a boil; then pour the water off, cover with boiling water and let simmer five minutes. Then pour off the water and renew again. Add a little salt to each water. When the onions are done, drain them well and rub through a sieve and add to them a cream sauce. This sauce may be served with boiled fish or boiled meats.

Brown Sauce.—To a pint of boiling milk add half a teaspoonful of salt and two tablespoonfuls of browned flour (rubbed to a smooth paste in one-fourth cup of cold milk). Cook rapidly and stir continuously until thickened, then allow it to cook more slowly for ten minutes.

CHAPTER X

PICKLES, SALADS, VEGETABLES, ETC.

Curing Meats—Pickles and Catsups—Salads and Salad Dressings—All Kinds of Vegetables—Rice Prepared in Various Ways—Macaroni and Spaghetti—Mushrooms—Breakfast Cereals—Egg Suggestions—Food Value of Eggs Compared with Meat—Egg Recipes—Cheese—Biscuits and Rolls.

Pickles are easy to prepare and are a stimulant to the appetite. They also add variety to the bill of fare. Catsup is another article which can be made at very small cost and always comes in handy for housekeepers.

The different combinations of salads are becoming very numerous, they being susceptible to economic preparations, or extravagance to suit the epicurean taste.

Fresh vegetables when in season furnish very wholesome dishes, and this chapter gives many valuable suggestions and recipes that will please the vegetarian.

Eggs should be broken separately into a saucer or cup, as one bad one will spoil all the others.

“Eggs beat with a knife will cause sorrow and strife;
Beat with a spoon will make heavy soon;
Beat with a fork will make light as a cork.”

CURING MEATS

Hams, 100 Pounds.—Salt, eight pounds; sugar, one and one-half pounds; saltpeter, one and one-half ounces; water, four gallons. Pack in a tub when cold, flesh side up, and pour the pickle over them. Allow them to lie in pickle, if the hams are large, six weeks. Dry and smoke to the taste. Before using the pickle boil it well and skim, and apply when cold. Keep the hams covered with pickle.

Beef, 100 Pounds.—Same pickle as hams, and allow to lie in pickle four weeks. Take up, drain and hang up to dry, and when dried rub

cayenne pepper over the dried beef. Wrap up the beef in strong manila paper, and tie securely to keep out flies and meat worms, and hang up in a moderately dry place.

Sausage, 48 Pounds.—Salt, three-quarters of a pound; pepper, one and one-quarter pounds; sage, one pint. Cut in small pieces equal parts of lean and fat meat, or more lean than fat if preferred, mix the salt, pepper and sage thoroughly through the meat, and cut fine by a machine. Bake in balls or pack in skins or in muslin bags. Sausage can be kept for a long time if partially fried and packed hot in deep tin cans. At once cover the sausage up with the hot fat left in frying the sausage. Three things to keep sausage in this manner are essential: First, narrow, deep tin cans; second, pack the sausage tight and hot; third, keep the sausage covered with the grease. When the cans are cold pour a little hot grease again over the sausage and that will fill all the air spaces and keep the air out. Earthen jars, when used, will allow the sausage to mold. To open the tin cans set in hot water, and if the cans are made as they should be, without tops, as soon as the fat melts invert at once over a dish and the sausage will slide out.

Take the Whole Side, after the ham and shoulder have been removed, and rub it with the following mixture: For each 100 pounds of meat seven pounds of salt, one pound of brown sugar and four ounces of saltpeter, finely powdered and mixed together. Spread this compound on the flesh side of the meat only, and rub it well. Lay another piece on the first one, treat it in the same manner and so proceed until all the meat is salted. Let it remain in this compound for the three weeks; it will then be ready to hang up to dry or to smoke, when it should be wiped off.

To Make a Simple Lard Press.—This plan will press lard better than any screw press on the market, and it need not cost any farmer a cent, as the parts which go to make it up are such as are in common use on the farm and in the kitchen. First get a tin bucket, cylindrical in shape, that is, one which is as large at the bottom as at the top; then with an awl punch holes around the side about one-half inch apart and from the inside out. Next get a bread-pan large enough for the cylinder to stand in; set this pan on a platform of two-inch planks and incline a little to the front. Now take tough inch-board and with an axe chop the corners rounding so as to easily fit

inside of bucket; on the top of this lid stand a two-by-four about a foot long, and on the top of this use a lever about twelve feet long. The short end of it must be under some raised building or other heavy object near which the press should be set, for the end must be held solid so as to bring all the pressure on the two-by-four on lid. Raise the platform high enough from the ground so as to admit a receiving vessel; put your "cracklins" in the press as hot as possible, as lard will not press out well when slightly cold; press down on long end of lever gently at first, then more firmly until on a level; now sit down on same and let lard drain a little. You will find on examining the cake pressed that it is good for animal food only, as every particle of fat will have been extracted.

PICKLES AND CATSUPS

How to Keep Pickles from Molding.—Drop a few slices or perhaps a few gratings of horseradish on the top of pickles in each jar. This addition adds piquancy to cucumbers and preserves their crispness.

Tomato Catsup.—Cut one peck of clean, sound, ripe tomatoes in halves, boil them in a lined saucepan until the pulp is all dissolved, then strain them well through a hair sieve, and set the liquor on to boil, adding one ounce of salt, one ounce of mace, one tablespoonful of black pepper, one teaspoonful of red pepper, one teaspoonful of ground cloves, five of ground mustard; let them all boil together for five or six hours, and stir them most of the time. Let the mixture stand eight or ten hours in a cool place, and add one pint of vinegar, and then bottle it; seal the corks and keep in a cool, dark place. The ounce of mace could be omitted; some like it in catsup and some do not.

Green Tomato Sauce.—Wash and remove stem, cut across and then in quarters; drain and add the juice to sugar. Take half a pound of sugar to each pound of tomato, one lemon, a teaspoonful each of whole cloves, cinnamon and piece of ginger root an inch long to each two pounds. Wash the lemons, shave the yellow rind, pare and reject the white part, then slice the lemon thin and remove all seeds. Put the sugar and juice from tomatoes and lemons and spice in porcelain kettle and just enough water to melt sugar. Add the lemon shavings and tomato; cook gently until tomato is clear, skim out the fruit, boil the sirup down a little, fill the cans and seal.

Lemon Tomato Catsup (new).—Prepare and cook the tomatoes in the usual way. Strain and add to each quart of pulp a third of a cup of lemon juice, two tablespoonfuls of sugar, a teaspoonful or two, as preferred, of celery salt. Some kinds are stronger than others. Seal while hot. This is the best and most healthful catsup, as vinegar disagrees with some stomachs.

Quince and Tomato Preserves.—Pare, quarter, core and cut into cubes the quinces, then weigh. Scald and peel an equal weight of plum tomatoes. To every pound of fruit take three-fourths of a pound of sugar and two-thirds of a cupful of water. Boil the sugar and water to a thin sirup, then add the fruit and cook till tender, but not broken; skim the fruit out, filling glass jars. Boil the sirup down for ten minutes; fill up the jars with it, then seal at once.

Tomato Cheese (new).—Scald five pounds of ripe tomatoes, remove the skin and place in aluminum pan or kettle with a pound of cored and quartered apples; add two and a half pounds of white sugar, a small teaspoonful pounded ginger and the juice of a lemon. When well cooked place in jars and seal for winter use.

Chili Sauce.—One dozen large ripe tomatoes, four large onions, three green peppers, one red pepper, two teaspoonfuls of whole allspice, one teaspoonful of fine broken stick cinnamon, one teaspoonful white cloves, one small root of green ginger, one cupful of vinegar, two tablespoonfuls of salt, two tablespoonfuls of sugar, one saltspoonful of cayenne. Chop the onions, tomatoes and peppers very fine, tie the whole spices in a thin muslin bag and boil all together for an hour. Bottle and seal at once.

Oyster Catsup.—One quart of oysters, one tablespoonful of salt, one teaspoonful of cayenne pepper and same of mace, one teacupful of cider vinegar, one teacupful of sherry wine. Chop the oysters and boil in their own juice with a teacupful of vinegar, skimming the scum as it rises. Boil three minutes, strain through a hair cloth; return the liquor to the fire, add the wine, pepper, salt and mace. Boil fifteen minutes and when cold bottle for use, sealing the corks.

Sweet Apple Chutney.—Peel and core one and a quarter pounds of green apples; cut them in slices lengthwise. Clean and pick one-half pound of sultanas and one-quarter pound of Valencia raisins; then stone and slice the latter in three strips. Peel and cut up one ounce of green ginger and one-quarter ounce of garlic; then pound to a



Courtesy of Breeder's Gazette

A TYPICAL NEW ZEALAND APIARY.

New Zealand is a country of surprises—one of the greatest mutton producers in the world, high in the science of dairying, and now it appears she is in the front rank as a cultivator of bees.



Courtesy of Breeder's Gazette

FEEDING THE POULTRY.

Although woman's work upon the farm seems never done, there is no one of her labors from which she derives more pleasure and solid comfort than in the feeding of the chickens and turkeys.



PLENTY OF AIR AND SUNSHINE.

These children may not know the appearance of a bath-tub or a comb, but, at least, they have plenty of air and sunshine, and probably sufficient exercise to keep them in condition. Each face and pose is a study. The picture is from life. How do you read the characters?

pulp in a mortar. Husk one ounce of white mustard seed. Boil one pound of best sugar with half a cupful of white wine vinegar to a thick sirup. Lay the sliced apples in a china or enameled dish, cover them with one-sixteenth of a pound of salt and let them stand, covered, for fifteen hours or over night, after which pour over them one-half cupful of white wine vinegar and let them steam and simmer until tender, but not broken. Do not mash them. Let the apples get cold, then add the cold sirup and all the other ingredients; add also one-eighth ounce of powdered chillies and one-sixteenth of a pound of salt (making one-eighth pound fine table salt used altogether in the recipe). Mix carefully and thoroughly together, pack into small jars, pressing out all the air bubbles, cork securely or cover one-quarter inch deep with melted paraffin and let stand six weeks before using. It is absolutely necessary to use perfectly enameled utensils in making the chutney, for if the enamel is broken the iron under the surface will spoil the color, and if tin comes in contact with acid it makes the food poisonous.

Pickled Peaches.—Eight pounds of pared peaches cooked in a sirup made of six pounds of sugar, one and one-half quarts of vinegar, to which is added one-half pound of seeded raisins and one-quarter pound of stick cinnamon. When the peaches are done put three cloves and three cassia buds in each peach, unless the peach is too small, then use your own judgment. The peaches are cooked sufficiently when transparent.

Pickled Walnuts.—Gather the walnuts when well grown, but still soft enough to be pierced through with a needle. Run a heavy needle through them several times and place them in strong brine, using as much salt as the water will absorb. Let them remain in brine for a week or ten days, and change the brine every other day; then drain the nuts and expose them to the air until they have turned black. Pack them in jars and cover them with boiling hot vinegar prepared as follows: To a gallon of vinegar add an ounce each of ginger root, mace, allspice and cloves and two ounces of peppercorns; boil them together for ten minutes and strain out the nuts. Let them stand a month before using.

Preserved Citron.—Slice the citron crosswise in slices one-third of an inch thick. Peel and remove the seeds. Cut citron into one-third inch dice. Place them in a porcelain kettle. Add one cupful of salt

to each five pounds of fruit. Cover with cold water and let stand over night. Drain and cover with fresh cold water. Soak two hours, changing the water four or five times. Dissolve one tablespoonful of pulverized alum in two quarts of boiling water, pour over citron and bring to boiling point. Drain. Prepare a sirup of two and one-half pounds of sugar and one and one-half quarts of boiling water. Boil and skim. Add citron and simmer gently until clear and tender. Drain citron from sirup. Set in the sun for two hours to harden. To the sirup add the peel of one large lemon, using only the yellow rind shaved off as thinly as possible. Add the juice of two lemons and a small piece of green ginger root (two inches long) sliced in thin slices. Boil gently for twenty minutes. Set aside. When citron is hardened fill into glass jars and bring sirup to boiling point and strain it over citron. Treat watermelon in the same manner.

Mangoes.—Take small green muskmelons or canteloupes. Cut a small square from the side of each one, and with a teaspoon scrape out all the seeds. Make a brine of one pint of salt to a gallon of water. Cover the mangoes with it while it boils. Let them stand two days; then drain them and stuff with two quarts of chopped cabbage, a cupful of white mustard seed, three tablespoonfuls of celery seed, two tablespoonfuls of salt, half a cupful of grated horseradish. Pour boiling vinegar over them, having added to it one pound of sugar.

Sweet Pickled Quinces are the equal if not the superior of any of the fruits prepared in this way. Choose finely flavored, juicy and well ripened fruit. Scrub well and remove all spots and decayed portions, but do not pare. Slice into rounds one-fourth inch in thickness, leaving in both core and seeds. Weigh the sliced fruit and to seven pounds allow three pounds of sugar, a pint of cider vinegar of medium strength and the following spices, which should be tied in a bag: one ounce stick cinnamon, one tablespoonful cassia buds, two tablespoonfuls allspice berries and one tablespoonful whole cloves. Cook the fruit, about a quart at a time, in sufficient water to cover until tender, then lift out carefully without breaking and place in a stone jar. The same water may be used for all, and when all are done add to the sugar, spices and vinegar, let boil, then pour over the fruit. Drain off the juice next morning, add spice bag, boil a few minutes, then pour over the fruit. Continue this for three successive morn-

ings. The last morning add the fruit and boil all together half an hour. Then can and seal.

Pickled Red Cabbage.—Cut a sound cabbage into quarters, spread it on a large flat dish and sprinkle it with salt. Place in some cool corner for twenty-four hours and then drain off the brine and lay in the sun for two hours to dry, then cover with cold vinegar for twelve hours. Prepare a pickle by seasoning enough vinegar to cover the cabbage with a mixture of allspice, cinnamon and black pepper, putting a cup of sugar to every gallon of vinegar, and adding a teaspoonful of celery seed to each pint. Pack the cabbage away in a stone jar; boil vinegar and spices five minutes and pour on hot. Cover and set away in a cool, dry place. This will keep for a month.

Beet Relish.—One quart of finely chopped cabbage, one quart of chopped boiled beet, two cups of sugar, one cup of chopped onion, one cup of grated horseradish, one tablespoonful of salt, one teaspoonful of black pepper and quarter of a teaspoonful of red pepper. Mix well with cold vinegar and keep well corked or sealed.

Nasturtium Pickles.—Gather the nasturtium seeds when they are small and green, before the inner kernel becomes hard, remove the stems and let them stand in salted water over night—a level tablespoonful of salt to a pint of water. In the morning drain and pour over them cold fresh water, rinse well, pack in small bottles and pour over them boiling vinegar; cork. You may sweeten and spice the vinegar if you prefer. They may be used as a substitute for capers, or added to your other pickles—either cucumber or mixed pickles.

Small Cucumbers.—Have the cucumbers of even size; rub them smooth with a cloth and place them in brine strong enough to float an egg. They will keep in the brine until wanted to pickle if desired. Soak the cucumbers in water for two days after taking them from the brine, changing the water once, and then scald in vinegar, or pour the boiling vinegar over them and let them stand in it two days before using. Put into each two quarts of vinegar, an ounce of peppercorns, a half ounce each of mustard seed and mace, a piece of horseradish, a piece of alum the size of a pea, and a half cupful of sugar; boil them together for ten minutes before straining it over the cucumbers. One pound of sugar may be added to the vinegar if sweet pickles are desired.

Chow-chow.—Cut into pieces one-half peck green tomatoes, two large cabbages, fifteen onions and twenty-five cucumbers. Mix them together and pack them in layers with salt; let them stand for twelve hours, then drain off the brine and cover them with vinegar and water and let them stand another twelve hours. Drain off the vinegar and cover them with one and one-half gallons of scalding hot vinegar, which has been boiled a few minutes with one pint of grated horseradish, one-half pound of mustard seed, one ounce of celery seed, one-half ounce of ground pepper, one-half cupful of cinnamon and four pounds of sugar. Let them stand until perfectly cold, then add one cupful of salad oil and one-half pound of ground mustard. Mix them together and place in jars and seal.

Mustard Pickles.—Take one quart small cucumbers, one quart large cucumbers sliced in rings, one quart green tomatoes (small), one quart button onions, one large cauliflower cut into small pieces, and four green peppers cut fine. Make a brine of four quarts of water and one pint of salt, pour over the vegetable mixture and let stand for twenty-four hours. After standing heat the mixture enough to scald it and drain in a colander. While this is scalding mix one cup of flour, six tablespoonfuls ground mustard, one tablespoonful turmeric powder, with cold vinegar enough to make a smooth paste; then add one cup of light brown sugar and also enough vinegar to make two quarts in all. Boil this until it thickens, stirring all the time; add the vegetables and cook until well heated through. This amount will make five quarts in all, and can be kept in Mason jars, or will keep in open jars if wanted for immediate use.

French Pickle.—Three pints of washed, sliced green tomatoes, from which the blemishes and stem ends have been removed, one pint of peeled, sliced white onions and three pints of peeled, sliced cucumbers. Place all in alternate layers in a stone jar and sprinkle salt between each layer, using one-half cupful in all. Let this stand twenty-four hours, then drain off the water which has drawn; mix with them quarter of an ounce of celery seed, one-eighth of an ounce of mace or cloves, or the two blended, one-half teacupful of white mustard seed, and one-quarter cupful of white peppercorns. Stir one-half tablespoonful of turmeric and one tablespoonful of ground mustard together, add water (three tablespoonfuls) and blend with the pickle as it is again laid in layers in the jar. Over all pour

one-half gallon or a little less of the best cider vinegar. There should be just enough to cover entirely.

Bean Pickles.—Pick the beans when young and tender. String them, then boil them in salted water until they can be pierced with a fork. Drain them through a colander, pack them into a stone jar, add a few small pods of cayenne pepper, then cover with strong cider vinegar in which sugar has been boiled in the proportion of two teacupfuls of sugar to a quart of vinegar.

Corn Pickle.—Chop one head of cabbage; sprinkle over it two tablespoonfuls of salt and let stand over night. Cut the kernels from twelve ears of corn, chop two peppers and mix both corn and peppers with the cabbage. Bring two quarts of vinegar to a boil, add one cup of sugar and a quarter of a pound of mustard, and pour over the corn and cabbage. When buying the mustard get the light-colored, high-grade stock, as the dark mustard spoils both looks and taste of the pickle.

Pickled Cauliflower.—Two cauliflowers cut up, one pint of small onions, three medium-sized red peppers. Dissolve half a pint of salt in water enough to cover the vegetables, and let these stand over night. In the morning drain them. Heat two quarts of vinegar with four tablespoonfuls of mustard until it boils. Add the vegetables and boil for about fifteen minutes, or until a fork can be thrust through the cauliflower.

Stuffed Peppers.—Select large, bell-shaped peppers. Remove and save the tops with the stems, and take out all the seeds. Stand the peppers upright in a large bowl, put a teaspoonful of salt in each, cover with cold water and allow to stand for twenty-four hours. The filling consists of two quarts of finely chopped cabbage, a half cupful of grated horseradish, a quarter pound of white mustard seed, three teaspoonfuls of celery seed, and two tablespoonfuls of salt. Put the mixture into the pepper, leaving room at the top of each for a small onion and a very small cucumber. Tie the tops on securely, put them in a jar and cover with cold vinegar.

Uncooked Spanish Pickle.—Chop fine or put through a meat chopper one large cabbage; peel and chop one dozen large cucumbers, chop one-half peck of green tomatoes, three green and two red peppers, and one quart of onions; mix thoroughly and add one-half pint of salt. Let stand over night and press dry. Put one gallon of

strong vinegar in a kettle with one ounce of mustard seed, one tablespoonful of cinnamon and one of cloves, and one ounce of juniper berries tied in a bag; add two pounds of sugar. Let come to a boil and pour over the pickle. Seal and place in a cool, dry place. Delicious and original.

Melange Pickle.—Chop one-half a good-sized white cabbage fine, sprinkle it with one-half cupful of salt, remove the seeds and core from one red pepper and six green peppers, chop them fine and cover them with salt. Let the cabbage and peppers stand one hour, then hand squeeze the cabbage dry and press all the water from the peppers by squeezing them in a sieve with a wooden spoon. Be careful to keep the liquid from the hands and from spurting into the eyes, for it would burn. Mix cabbage, peppers, one small teacupful of freshly grated horseradish, one ounce of whole cloves, one ounce of white mustard seed and a quarter of an ounce of celery seed. Place in a stone crock. Pour over one quart of cider vinegar, cover and keep in a cool place.

Chopped Pickle.—One peck green tomatoes, one dozen large onions, four heads of celery; chop all fine, sprinkle with one cupful of salt and leave for twenty-four hours. In the morning drain and add one tablespoonful white mustard seed, one teaspoonful celery seed, one cupful sugar, six green peppers and two red ones chopped fine. Cover with vinegar and let all boil slowly for three hours.

Sweet Tomato Pickle.—One peck of green tomatoes and six large onions, sliced. Sprinkle with one cupful of salt and let them stand over night. In the morning drain. Add to the tomatoes two quarts of water and one of vinegar. Boil fifteen minutes, then drain again and throw the vinegar and water away. Add to the pickle two pounds of light brown sugar, two quarts of vinegar, two tablespoonfuls of clove, one of allspice, two of mustard, two of cinnamon and one teaspoonful of cayenne, or better still, one green pepper cut into inch pieces. Boil fifteen minutes, or until the tomatoes are tender.

Green Tomato Pickle.—One-quarter peck of green tomatoes, sliced into a stone jar and sprinkled with one-quarter cupful of salt, divided between the layers. Next morning drain well and scald with vinegar and water, half and half. Drain a second time. Pack into a stone crock in alternate layers, with a mixture composed of six thinly sliced onions, one-quarter pound of white mustard seed, one ounce of celery

seed and three chopped red peppers, cores and seeds removed. Pour in sufficient scalding vinegar to cover well, and set aside for a few weeks before using. Cover well from the air.

Piccalilli.—One peck of green tomatoes, one cup of salt, six small onions, one large head of celery, two cups of brown sugar, one teaspoonful of white pepper, one teaspoonful of ground cinnamon, one teaspoonful of ground allspice, one tablespoonful of mustard, two quarts of vinegar. Chop the tomatoes, mix the salt with them thoroughly, and let them stand over night. In the morning pour off the water and chop the onion and celery. Mix the sugar, pepper, cinnamon and mustard. Put in a porcelain kettle a layer of tomatoes, onion, celery and spices and so on until all is used and cover with the vinegar. Cook slowly all day, or until the tomatoes are soft.

SALADS AND SALAD DRESSINGS

A Staple Salad Dressing.—Take eight eggs, one cupful each of butter, cream and sugar, one tablespoonful each of black pepper, salt and mustard, one and one-half pints of vinegar, and a pinch of cayenne pepper. Beat the yolks of the eggs, add the other ingredients, except the butter, mix thoroughly. Heat the vinegar, add the butter, boil and pour over the mixture, and stir it well while cooking. When this is cold it may be bottled and kept for weeks during the hottest weather, provided the bottle is covered thickly with brown paper to exclude the light. This is an excellent dressing for cabbage or lettuce, or any other vegetable salad and it can even be used with fruit and nuts when occasion demands.

When kept in pint cans, carefully sealed, it will not deteriorate, and salad always makes a nice addition to either supper or dinner. When the dressing is all ready for use the work of preparing the salad is hardly worth mentioning, and there are few cupboards so bare that something may not be found for some kind of salad. It may be used on apples and celery, celery and cabbage, or cabbage and onions—in fact the combinations that may be made are endless. And cold meats and fruits and nuts may be mixed.

Another Recipe.—Rub the yolks of four hard-boiled eggs smooth, add two teaspoonfuls of dry mustard, two of fine salt, and a few dashes of cayenne, or you may use white pepper or paprika, if you object to the “bite” of the cayenne, using considerable more; mix

these thoroughly, then add one tablespoonful of fine sugar, two of olive oil and four raw eggs well beaten; after this is worked to a smooth paste add very slowly a scant cup of vinegar and mix thoroughly. Pour in bottles, cork and keep in a cool, dry place and shake before using. This sells in the city stores for thirty-five cents one-half pint bottles.

Mayonnaise Dressing.—An hour before making the dressing place in the icebox two eggs, a deep soup plate and a bottle of salad oil, and let them get chilled. Break the eggs carefully, drain off every particle of the whites, and drop the yolks in the chilled soup plate. Squeeze a teaspoonful of lemon juice on the yolks, and with a silver fork stir them with a rotary motion. Begin at once to pour in the oil, a drop at a time at first, then a teaspoonful, lastly a tablespoonful. When the dressing is like a yellow jelly thin it with lemon juice to taste, a dash of paprika and a little salt and mustard. Stir well together and add more salad oil until at least half a pint has been used. As much as a pint may be safely stirred into two yolks, although less will be sufficient. Keep the mayonnaise in a cold place until wanted.

Ham Salad.—Chop very fine one pound and a half of lean ham and two ounces of fat. Into one-half a cupful of vinegar stir one-quarter of a teaspoonful of dry mustard and pepper to taste; put on to boil. Beat one egg, yolk and white together until very light. When the vinegar boils take it off the stove and stir in the beaten egg; return to the stove and boil, stirring constantly until it thickens. Salt is not needed, for the ham is already salty enough. Pour this dressing over the ham, mix well and serve cold, garnished with lettuce.

Novelty Potato Salad.—To make potato salad use half a dozen good-sized, cold boiled potatoes sliced and arranged in a salad bowl with a little salt and pepper sprinkled on, and then a dressing of oil and vinegar. Next two salt herrings, boned and picked into bits. Cover this with a mixture consisting of two sour apples, pared and sliced, a few cucumber pickles, and a half dozen slices of pickled beets cut into dice, a tablespoonful of chopped onions and then enough more of the dressing to cover the salad nicely.

Onion Salad.—Cut Bermuda onions into thin slices and arrange them in nests of lettuce on a shallow dish and cover with French dressing.

Cabbage Salad.—Shave one tart apple and one-half head of cabbage on a slaw cutter and mix with a French dressing.

Pepper Salad.—Take equal number of red and green peppers. Cut out stem ends and carefully remove veins and seed. Arrange alternately on toasted crackers, fill with cabbage salad and add spoonful of either boiled or mayonnaise dressing.

Hot Beet Salad.—Serve the beets piping hot with the ordinary dressing of vinegar, butter, pepper and salt.

Stuffed Beet Salad.—Boil large beets and scrape off the skins. With a small spoon scoop out the insides of the beets. Let them get perfectly cold. Chop up half as much minced ham and chopped parsley. Season with salt and pepper and put the mixture back in the beets. Set the beets on the lettuce leaves and pour a mayonnaise over all.

September Salad.—Select blood beets of uniform size. Boil until tender and put in icebox until cold. Skin the beets, cut off a slice from the stem end that they may stand firmly, remove centers until you have only hollow shells. Fill with vinegar until needed. Pour out vinegar when ready to serve and fill full of crisp chopped celery and mayonnaise dressing. Put on top of each a ring cut from a hard boiled egg and sprinkle with bits of chopped parsley. Serve on lettuce leaves.

Celery Salad.—There are many recipes for celery salad. A simple one is made by cutting firm, fresh tomatoes into cubes, add an equal quantity of celery cut into bits; cover with mayonnaise.

Another Celery Salad.—Chop one bunch of celery fine. Put in dish. Add salt, three tablespoonfuls of vinegar and three of sugar. Let stand a few minutes. Then add three tablespoonfuls of good, thick cream and serve.

Mushroom Salad.—Drain stewed wild mushrooms, cut into quarters and bed on lettuce, then chill; garnish with nut meats and dress with lemon catsup.

NUT AND FRUIT SALADS

Cheese Nut Salad.—Moisten a cupful of soft, freshly made cream cheese with two tablespoonfuls of cream, add a level teaspoonful of salt, a saltspoonful of white pepper and a dash of paprika; form into balls the size of marbles. Press half a walnut meat into each side. Serve on crisp lettuce leaves and pour a mayonnaise dressing over.

Chestnut Salad.—Shell a pint of large, solid chestnuts; throw them into boiling water for five minutes, and remove the brown skins; then boil or steam until tender. While they are boiling put into a bowl a saltspoonful of salt, a dash of black pepper, one onion sliced very thin, and four tablespoonfuls of olive oil, rubbing all the while, and then two tablespoonfuls of tarragon vinegar. Pour this over the chestnuts while they are hot. Stand aside until very cold. Serve on lettuce leaves.

Pecan Salad.—Two parts celery, one part pecan meats. Dressing: Two tablespoonfuls French mustard, two of olive oil or melted butter, three eggs stirred in, one at a time, and one teacupful of vinegar. Cook in a double boiler. Be careful not to let it curdle.

Nut Salad.—Four boiled potatoes sliced thin, three bunches of celery cut in small pieces, a half cup of English walnuts, one cup mayonnaise dressing, one cup whipped cream.

Nut Salad.—Break butternut or hickorynut meats in small pieces and mix with twice the quantity of celery chopped not very fine; for the dressing stir to a cream an egg, two scant tablespoonfuls of salt, half a teacupful of vinegar and a saltspoonful of dry mustard.

An Excellent Salad to Serve with Duck is made of peanuts. Soak one cupful of the meats in olive oil for half an hour. Drain and toss in the salad bowl with two cupfuls of finely cut celery and ten or twelve pitted olives. Mix with a mayonnaise dressing and serve on lettuce leaves.

Pineapple Salad.—Equal quantities pineapple, apple and celery. Dressing: Two eggs, beaten light, then add two tablespoonfuls of flour, six of sugar, two teaspoonfuls of salt, one of dry mustard, one of butter. Add one and one-half cups white wine vinegar. Boil until thick. Add just enough dressing to mix the salad, then add whipped cream till puffy.

Grape Salad.—This salad is very pretty, besides being delicious. Stem California grapes, and with a sharp knife make small incisions in each grape. Remove seeds and fill each cavity with coarsely chopped English walnuts. Place each serving of grapes on a dainty bed of light green curled lettuce leaves. Serve with narrow crisp wafers. Large, ripe, white California grapes will peel easily. Allow five to a person.

Tomato and Pineapple Salad.—Arrange crisp lettuce leaves on a

platter and place on the center of each leaf sliced tomato, alternating with a slice of canned pineapple, with a preserved cherry in the middle of each slice. Marinate with a French dressing.

Fruit Salad.—Equal parts of bananas, oranges and Malaga grapes cut in small dice. Mix, add a good salad dressing and serve on lettuce leaves.

Rich Orange Salad.—Slice three oranges. Cut the slices in halves, arrange the slices overlapping each other in the form of a cross in a shallow salad bowl. Cut the celery into finger lengths and slash the ends. Arrange on each side the orange slices. Heat one cup of strained honey, add to it the juice of one lemon and pour over the salad.

White Grapes, Asparagus Tips and English Walnuts, with a whipped cream dressing, make a novel and dainty salad.

Hollowed-out Apples or Beets make artistic and pretty cups to hold salad.

VEGETABLES

If we would be healthy we must eat vegetables and plenty of them. These bodies of ours cannot be perfectly healthy without them. Here are some facts as to the qualities of the various familiar vegetables.

Great care should be exercised in the selection and preparation of vegetables. The elements of nutrition are wasted in a great variety of ways,—by soaking, parboiling, burning and in cooking too long or not long enough.

All vegetables are compounds of cells surrounded by a woody fiber, and rapid boiling toughens the fiber and ruptures the cells, dispeiling into the water and air many of the principles that should remain as food.

Vegetables are rich in mineral elements and also give bulk to food. It would be impossible to live a healthy life upon vegetables alone, as it would require too much bulk to receive a proper ration of food. They should be used in combination with foods rich in the carbonaceous and nitrogenous elements.

The Young Shoots of Asparagus have from remote time been held in high repute as a culinary vegetable owing to their delicate flavor and diuretic virtues. No vegetable is more favorably known as a cleansing agent of the kidneys.

The Common Bean is more nutritious than wheat. It is, however, a rather coarse food and difficult of digestion. Wax and butter beans, when cooked tender, are wholesome and nutritious. Peas are equally nutritious and wholesome.

The Beet, owing to the amount of sugar it contains, is considered more nutritious than any other esculent tuber except the potato.

The Cabbage Family has in it many branches—namely, Brussels sprouts, one of the most delicate of table vegetables; the common drumhead, of which sauerkraut is made; the red cabbage, excellent for pickling; cauliflower; broccoli, a variety of cauliflower; broccoli sprouts and kale, besides numerous other varieties unfit for table use, adapted to the needs of animals. All contain a large percentage of nitrogenous compounds as compared with other articles of food. They are a mental and physical tonic, but unless eaten very fresh are difficult of digestion, and have a very decided tendency to produce flatulence.

The Carrot is a vegetable but little used by Americans, but can be found almost a daily accompaniment to the Frenchman's dinner. Carrots contain sugar enough for making a sirup for them. Starch does not enter into their composition, but a small portion of pectose is found instead. Iron is the mineral of greatest value found in the carrot, and gives it color. It is said that the frequent use of carrots will bring brilliancy to the eye, smoothness and gloss to the hair and clearness and color to the complexion.

Celery contains aromatic oil, sugar, mucilage, starch and manna sugar. The daily moderate use of celery is said to remove nervousness and even palpitation of the heart. For rheumatism and kidney trouble it is considered excellent. Those having weak digestions should eat celery cooked, as the fiber of celery makes it difficult of digestion.

The Cucumber and Muskmelon possess remedial qualities for rheumatism. Their juices are also valuable as an emollient for the complexion, in the form of lotions, cold creams or pomades.

The Onion, belonging to the same family as the garlic and leek, is classed among the vegetables of value as a blood purifier; it stimulates the secretions, and like celery is useful for nervousness. The strong taste and smell of onions are due to volatile oil rich in sulphur. The purgative properties of the onion recommend its frequent use to

cleanse the general system. It especially promotes discharge from the mucous membrane of the lungs and trachea.

Horseradish is a good local stimulant and a mental and physical tonic. Its frequent use will relieve the tendency to dropsy, and it contains properties that are beneficial to chronic rheumatism sufferers.

Spinach exerts a strong influence over lungs and liver. Its seeds are often prescribed in the Orient for inflammation of the liver and to relieve difficult breathing. It is called by a French physician "the broom of the stomach," and is considered a blood purifier and a complexion beautifier.

The Parsnip contains but little nutrient value, mostly starch and sugar, with one per cent mineral matters. It should be handled with care in cooking and serving, as the fibrous matter contained therein makes it difficult of digestion. There is danger in eating parsnips very late in the spring. After they begin to sprout they acquire an acrid taste and are poisonous.

Potatoes have been easily grown and preserved, consequently the American people have learned the habit of making them too strong a staple of diet. A potato is about seventy-five per cent water, twenty-five per cent remaining as food, with too strong a per cent of starch to make it a food perfect in dietetic proportions. In the majority of homes you will find the potato upon the table three times a day. Once a day is often enough. Substitute rice and corn and they will give better food proportions. The nutritive value of the potato is twenty-two, rice eighty-six, corn eighty-seven per cent.

Rhubarb is a most efficient stomachic. By its use the stomach is strengthened and incited to healthy action.

The Squash has great food value. Its properties are similar to those of the sweet potato.

The Watercress is a pungent stimulant with anti-scorbutic properties.

Nasturtium Pods have similar attributes to the horseradish and watercress.

The Medicinal Qualities of the Radish stimulate, cleanse and tone the system.

Lettuce is especially healthful, because so easy of digestion.

Added to this are laxative and soporific qualities which make it a valuable salad for nervous people.

Okra has a soothing effect upon the system.

POTATOES

Lime and Potatoes.—A little lime sprinkled on potatoes that are to be kept as far into the spring as possible keeps them from becoming watery, and a little lime as well as a little salt put into the water in which old potatoes are boiled makes them mealy.

Boiled Potatoes.—In cooking Irish potatoes boil till tender, pour water off, set on back of stove in the vessel they are boiled in, for five minutes. They will fall to pieces when you take them up and not be watery as they are when left in the water.

Baked Potatoes.—Pare large, even-sized potatoes, bake on a tin plate in a moderately heated oven, turn occasionally that they may bake evenly. Serve on a platter covered with a napkin.

Fried Potatoes with Egg.—Fry one pint of sliced, seasoned, cold potatoes in one tablespoonful of butter until brown; beat up and stir into them one egg when ready to serve.

Escalloped Potatoes.—Thin slices of salt pork are fried crisp, and a gravy is made by stirring flour into the hot fat, and then adding milk and letting it come to a boil. Cold boiled potatoes are sliced into an earthen dish and seasoned, the crisp pork is mixed in and the gravy poured over all. The dish is covered closely and set in the oven and when it is baked for a breakfast dish there are few who do not consider it appetizing.

Escalloped Potatoes and Onions.—Cut pared potatoes and peeled onions into thin slices, dispose in alternate layers in a buttered baking-dish, adding a teaspoonful of salt and a saltspoonful of pepper to a pint of potatoes. Pour over milk to cover the ingredients and bake about three hours, adding more milk if needed. Fifteen minutes before serving cover the top with two-thirds of a cup of cracker crumbs mixed with a tablespoonful of butter and let brown in the oven. This dish, if prepared with cooked potatoes and onions, requires only half an hour's cooking.

Potatoes with Oysters, Manhattan Style.—Boil eight or ten large potatoes in water, to each quart of which add one teaspoonful of salt. When tender mash them well, add the yolks of two eggs, a teaspoon-

ful of chopped parsley and a "suspicion" of chopped onion. Add a scant teaspoonful of salt and a dusting of nutmeg and mix all well together, then stir in three tablespoonfuls of cream and finally the whites of the eggs beaten to a froth. Shape into flat rissoles or croquettes and roll in cracker meal. Make a depression in each rissole for the oysters. Have ready a pan of deep boiling fat, drop in the potatoes, letting them become a golden brown—three minutes suffice. While these are browning put a pint of good oysters in a covered stewpan with their own liquor and one-eighth teaspoonful of pepper. Cook two minutes, without boiling. Turn off the juice and add a scant cup of white sauce. Let the oysters stew gently in this while the potatoes are being dished. Arrange croquettes on dish, and fill the depressions with the oyster mixture, taking care to have a margin of brown potato all the way around.

Delmonico Potatoes.—Reheat two cups of cold boiled potatoes cut in dice in one and one-fourth cups of white sauce. Put a layer in a buttered pan or pudding-dish, sprinkle with grated cheese and continue until all are used. Cover with buttered crumbs and bake until crumbs are brown. If the white sauce is rather thick cover the contents of the dish with milk before placing it in the oven.

The white sauce is prepared thus: Two tablespoonfuls of butter, three tablespoonfuls of flour, one cup of milk, one saltspoonful of salt and half that quantity of pepper. Melt the butter and stir the flour in while the dish is still over the fire, being careful not to brown the mixture in the least. Gradually add the milk, stirring the while to prevent the sauce from becoming lumpy.

Parker House Potatoes.—To a pint of hot, seasoned mashed potatoes add one beaten egg and one tablespoonful of flour. Roll half an inch thick and cut into large circles. Lay one teaspoonful of minced cooked lamb or veal on half of each and fold over, pinching well together. Lay on a buttered pan and bake brown. Serve with veal gravy.

Colonial Potatoes.—Prepare a quart of hot mashed potatoes in the usual way. Grease twelve small cups with butter, pack with the potato and turn out. Sprinkle each pyramid thickly with fine brown-bread crumbs, stand in a greased pan and place in a hot oven until the crumbs are crisp. Place on a platter and in the top of each place a sprig of curly parsley.

Potato Chowder.—Peel and slice a number of medium-sized potatoes, put a large teaspoonful of sugar and a quart of hot water in a stewpan, add salt, and when boiling hot add the potatoes and cook slowly for half an hour. Add a pint of milk, let it come just to a boil, add more seasoning if necessary, thicken slightly and serve immediately. A little pulverized dried parsley or celery seed, or both, will improve the chowder if added a few minutes before serving.

Potatoes and Cheese.—Wash well six medium-sized potatoes and bake until tender. Cut off the end of each and scoop out the contents into a hot bowl. Add one teaspoonful of butter, salt and pepper to taste, and three tablespoonfuls of cream. Beat until very light, then add three tablespoonfuls of grated Swiss cheese. Mix, fill the skins and return to the oven until thoroughly heated.

Massasoit Potatoes.—When you reach the bottom of the potato barrel and find a panful of tiny potatoes which paring would reduce to nothing, transform a quart of them into delicious Massasoit potatoes. Brush clean and boil for twenty-five minutes. Drain, drench with cold water, skin and pile them in a shallow baking-dish. Pour over them a coffee cupful of thin cream sauce, toss lightly with a fork until well coated with the sauce. Sprinkle with a tablespoonful of Parmesan cheese and bake until delicately browned.

SWEET POTATOES

Sweet Potato Pone.—Wash, but do not peel, enough raw sweet potatoes to make one and one-half pints when grated. Grate them on a horseradish grater, then add three well beaten eggs, half a cupful of molasses, one cupful sugar, one heaping tablespoonful butter, two teaspoonfuls baking-powder, and a very little ginger, or cinnamon and cloves if preferred. This, when mixed, should be of the consistency of corn-bread batter. If not, add more of the grated potato. Bake it in a small dripping-pan.

Sweet Potato Croquettes.—To a pint bowlful of peeled, boiled and mashed sweet potatoes add a generous tablespoonful of butter, the whites of two eggs, whipped to a froth, half teaspoonful salt and a shake of pepper, a gill of hot cream, or just enough to make the mixture soft enough to handle; mold into shape, roll in crumbs, then in beaten eggs, again in crumbs and fry in very hot lard.

Sweet Potatoes with Sausage.—Wash but do not peel five even sized potatoes, lay them peel side down on a bake-pan, cutting off a little so that they will lie flat; scoop a hollow in the cut side, fill in with sausage meat; pour a little hot water in the pan and bake in a moderate oven.

ONIONS

Boiled Onions Can Be Made Very Delicate if cooked in a number of waters. They should be placed in salted boiling water, and cooked until tender, the water changed several times, the vegetable thoroughly drained and served with either a white sauce, melted butter, or, if the onions are to be served as a garnish, they can be browned. After they are boiled tender in the pan they should be sprinkled with salt, pepper and a little sugar and put into a hot oven to brown.

Stuffed Spanish Onions.—Peel the onions, scoop out from the top a portion of the center, parboil them for five minutes and turn them upside down to drain. Fill them with a stuffing made with equal parts of chicken or meat and soft bread crumbs. Chop the onion taken from the center and add it to the mixture. Season it with salt and pepper and moisten it with melted butter. Fill the onions and sprinkle the top with crumbs. Put them in a buttered pan and bake slowly, basting with melted butter. When they are thoroughly done remove the string and serve them on pieces of toast.

Roast Onions.—Select large onions of uniform size. Do not peel them. When they are tender remove the skins and lay them in a heated covered dish and pour over them a sauce which consists of two tablespoonfuls of butter melted in a saucepan (do not let it color); stir into it a smooth paste made of two tablespoonfuls of flour and a cupful of milk, and stir until the sauce is smooth and thick. Season with salt and pepper to taste, a teaspoonful of minced parsley, a teaspoonful of lemon juice, and add, just before removing from the fire to serve, one egg slightly beaten.

Onion Pie consists of six Spanish onions sliced and placed in a saucepan with enough butter to fry them a golden brown. The pan should be covered, and when the onions are tender a cupful of rich milk should be added, one egg beaten and stirred with a tablespoonful of flour and a little cold milk. Season with a half teaspoonful of salt and a dash of pepper. Have ready a deep baking-plate lined

with a plain pie crust. Turn in the onion mixture, cover the top with buttered bread crumbs and place in the oven until brown. The crust should be well baked before putting it with the onion mixture.

Escaloped Onions.—Boil onions in salted boiling water to which milk has been added until they are tender. Then drain, reserving the liquid for making soup, and put the onions into a baking-dish in alternate layers with bread crumbs, salt, pepper and a little sage. Dot each layer of crumbs with bits of butter; pour over the whole a cup of milk; cover the top with crumbs and bits of butter; bake a light brown and serve very hot.

Creamed Onions.—Boil until very tender, changing the water twice; break in bits, season very freely with cream and butter, salt and white pepper to taste. Serve from a covered dish.

Mashed Onions.—Peel a dozen onions, blanch and drain them; put them in a saucepan with enough white stock to cover them; simmer them slowly until they are done, but do not allow them to get colored. Add a cup of Bechmal sauce and let it cook until well reduced and thick, then rub the whole through a sieve. Add a little butter, season and serve.

TOMATOES

Stuffed Tomatoes.—Dip the tomatoes into boiling water, peel them and scoop out the centers with a small spoon and place the tomatoes on a tin dish. Mix a lump of butter the size of a walnut with an ounce of flour, a little mushroom liquor, a tablespoonful of tomato sauce, a dessertspoonful of olive oil, a teaspoonful of chopped parsley and shallots in equal quantities, half a teaspoonful of salt and one-eighth of a teaspoonful of pepper; place in a saucepan over the fire and stir until quite hot and thoroughly mixed; fill each tomato with some of this stuffing; sprinkle with grated bread crumbs. Put into a baking-tin with a few spoonfuls of olive oil and bake for ten or twelve minutes.

Virginia Cream Tomatoes.—Select firm, smooth and rather small tomatoes fresh from the vine if possible; scald and remove skins without breaking the fruit, cutting out the hard core at the stem end. Place them close together, with the cut sides up, in an enameled pan, in which has been spread half an ounce of butter. Set this on the stove and keep at a heat just below the frying point. A higher degree of heat will scorch the butter, cause the tomatoes to stick to the pan,

the juices to escape and the entire dish to be spoiled. Into the cut places at the stem end of each tomato press a teaspoonful of fine dry bread crumbs, allowing for each tomato an eighth of a teaspoonful of salt, a dash of pepper and a half teaspoonful of butter. Continue to cook slowly till the tomatoes show signs of breaking, which will be in about fifteen minutes. Then pour in for a half dozen tomatoes one-fourth pint of cream (milk will not do), and begin immediately to remove the tomatoes carefully with a large spoon to a hot vegetable dish. By the time all are taken up the cream will have simmered a little and become a golden color. Add a saltspoonful of salt, a good dash of pepper, and pour this over the contents of the dish. Half a teaspoonful of chopped parsley may be added to the gravy. This dish may be cooked in the oven if you watch it very carefully.

Tomato Toast.—Have ready toasted squares of bread. To one-half can of cooked and strained tomatoes add one tablespoonful of butter and flour blended, half teaspoonful of salt, teaspoonful of sugar. Pour over toast.

Mock Oysters.—Stir into one pint of tomatoes one level teaspoonful of soda. Heat one quart of milk, add the tomatoes and a heaping tablespoonful of butter. Salt and pepper to taste. Let come to a boil. Serve with oyster crackers.

Tomato Timbale.—Boil half a pound of macaroni until tender, but not broken, strain it and cut it into lengths which will fit a plain round mold; line the mold with the macaroni bent in circles. Fill with a mixture made of one pound of tomatoes, one pound of mushrooms and a quarter of a pound of grated Parmesan cheese, all stirred together with four ounces of butter and the yolk of an egg; season with a teaspoonful of salt and a grain of red pepper. Put a paper around the mold and steam it for an hour. Turn out and ornament with small tomatoes on the top and serve with white mushroom sauce.

Tomato Farces.—Carefully peel large, firm tomatoes and scoop out the centers. In the hollow thus left in each tomato put a layer of minced ham. Set the tomatoes in a bake-pan, sprinkle with salt and pepper, put a bit of butter upon the top of each and cook for ten minutes. Then drop upon the mince in each tomato a raw egg; dust with salt and pepper and cook until the eggs are "set."

Green Tomato Pie.—Cut and peel the tomatoes in thick slices, then wash in several waters to remove most of the seed, drop into hot water and bring to a boil, then drain thoroughly. To each pound of tomatoes add three-quarters of a pound of sugar and the grated rind of a lemon; cook all together until the tomatoes are clear, then set aside to get cold. Add the juice of a lemon and bake in a bottom crust with strips of pastry laid across the top as for tart.

Fried Tomatoes.—Select smooth, round tomatoes of equal size, cut them in thin slices, sprinkle with salt. Make a fritter batter with flour, water, egg, pepper and salt. Dip each slice of tomato in the batter, then fry in sufficient hot fat to brown both sides at once. These are excellent served as a vegetable, or for breakfast, accompanied by a poached egg and crisp bacon.

Preserved Green Tomatoes.—Select the small tomatoes, wash and cover with boiling water and scald until the skins loosen; then peel and drain; take equal weight of granulated sugar and tomatoes and make a sirup with water and the juice of a lemon and a few pieces of stick cinnamon. Put in the tomatoes and cook gently until they are tender and clear.

CABBAGE

Baked Cabbage.—More often than not cabbage is ruined by being cooked too much. Take a head of cabbage and cut as fine as though it were to be used for cold slaw. Put it into a pan and then fill the pan about two-thirds full of sweet milk. Season well with pepper, salt and a little butter. Put this into a second dish partly filled with water and bake until tender.

Baked Cabbage—Another Recipe.—Boil a hard head of cabbage fifteen minutes, drain, pour over boiling water and cook until perfectly tender; when cold chop fine, add two beaten eggs, a tablespoonful of butter, three of cream, salt and white pepper, and bake in a buttered dish until brown.

Escalloped Cabbage.—Cut one-half boiled cabbage in pieces, put in baking-dish, add salt and pepper and pour over it grated Parmesan cheese and grated bread crumbs. Bake one-half hour.

CAULIFLOWER

Boiled Cauliflower.—Trim off the outside leaves and cut the stalk even with the flower. Let it stand upside down in salted water for

fifteen or twenty minutes to take out any insects there may be in it. Put it into a generous quantity of rapidly boiling salted water and cook it uncovered for about twenty minutes, but not so soft as to fall to pieces. Remove any scum from the water before lifting out the cauliflower. Serve with a white or Hollandaise sauce.

Cauliflower au Gratin.—One large cauliflower, four tablespoonfuls of grated cheese, one cup of drawn butter, pepper and salt. Boil the cauliflower until tender, about twenty minutes, have ready a cup of good drawn butter and pour over the cauliflower after it has been drained and dished. Sift the cheese thickly over the top and brown by holding a red-hot shovel so close to the cheese that it singes and blazes, or under a gas flame.

SPINACH

Spinach and Eggs.—Boil the spinach carefully and chop it fine. Season with oil, vinegar and pepper. Press firmly into small molds; then take them out and decorate the top with hard boiled eggs. Garnish with lettuce. Serve with a mayonnaise or boiled dressing.

Spinach Souffle.—Take a cupful of spinach, carefully prepared, and mix with it the beaten yolk of an egg and stir it over the fire until the egg has set; let it cool. When ready to serve stir into it lightly the well beaten whites of three eggs. Fill individual china cups or buttered paper boxes half full and place them in an oven for ten or fifteen minutes. Serve at once. Like any souffle it will fall if not sufficiently baked or if not served promptly.

Spinach and Cream.—Pick off the leaves from the stalk, put on and boil in water with a little salt, and cook twenty minutes. Drain thoroughly and chop fine. Return to the fire with a generous piece of butter, a teaspoonful of sugar, a little nutmeg, pepper and salt, and stir two minutes. Then beat in two or three tablespoonfuls of cream and thicken as you would a custard. Let it boil up once and serve immediately.

Chartreuse of Spinach.—Boil a large carrot and turnip, cut them into slices lengthwise three-eighths of an inch thick, then into strips of the same width. Butter a mold, ornamenting the bottom with hard boiled eggs or fancy pieces of vegetables; around the sides of the mold place close together alternate strips of the carrot and turnip; if the mold is well buttered they will easily hold in place.

Fill the center with cooked spinach and press it down so that it is quite firm. Smooth the top and cut off the strips of vegetables so that they are even. Heat the chartreuse by placing the mold in a pan of hot water and placing both in the oven for a few minutes. Turn the chartreuse on a flat dish and serve. A white or vinaigrette sauce may be served with it. This is an excellent dish to serve with chops or sweetbreads. Cabbage may be used in place of the spinach if desired.

TURNIPS, CARROTS AND PARSNIPS

Turnips with Eggs.—Peel, cut in thin slices and boil tender but not to break, drain, mash, season with salt, pepper and butter, stir in two or three beaten eggs, set on the stove and stir until the eggs are cooked.

Young Turnips or Carrots Baked.—Take a pint of young turnips or carrots that have been cut into small dice and put them into a baking-dish containing an equal quantity—or a little more—of milk, and season well with pepper, salt and a teaspoonful of butter broken into little bits. Set the baking-dish into a pan half full of water and bake for three-quarters of an hour. The milk will, by this time, have become rich and creamy. Now dust bread crumbs over the top, put on a little butter and brown nicely in the oven.

Carrot Croquettes.—A dozen small croquettes can be made from four large carrots. Boil them till tender, drain and rub through a sieve. Add one cupful of thick white sauce (using for it two heaping tablespoonfuls of flour), mix, season highly, and when cold and firm shape and finish as for other croquettes.

Carrot Fritters.—Grate six cold cooked carrots, add one-half cupful each of flour and milk, one teaspoonful sugar, one-half teaspoonful each of salt and pepper. Mix well and then add two well beaten eggs; fry in deep fat.

Baked Parsnips.—Scrape and slice in rounds three parsnips, pare and cut in round slices two medium sized sweet potatoes. Sprinkle with two tablespoonfuls of sugar. Put in a buttered baking-dish, pour over one cup of rich milk and one tablespoonful of melted butter. Cover and bake for twenty minutes in a hot oven; uncover and brown.

Parsnips.—A delicious novelty in a vegetable dish may be had by cutting parsnips into strips about three inches long, allowing them to

soak in cold water for half an hour, then drying in a towel and frying in deep fat as if preparing French fried potatoes.

SQUASH

Cooked Squash.—The best way to cook Hubbard squash is to cut it in half, take out the seeds and then bake in a medium oven for an hour or more if not done. Remove the brown skin that will form on top, put the squash through a fruit press and season it with salt, pepper, butter and a little cream.

Squash Baked in Half-shell.—Select a ripe and well-shaped winter squash; cut in half lengthwise; take out the seeds and scrape carefully, but do not pare. Place one or both halves in a baking-pan, pour around a little water, cover and bake in moderately hot oven one and one-half hours, or till very tender. Fifteen minutes before it is done remove the cover; turn out the water that has accumulated; rub the inside with butter, sprinkle well with salt—from one and one-half to two teaspoonfuls to the half-shell—and a saltspoonful of pepper. Return to the oven to dry off and slightly brown. Place on a platter and serve from the half-shell with a spoon.

Squash Dulce.—Pare and boil squash until dark and thick. To every quart of the boiled squash add a teaspoonful each of ginger and cinnamon, half a teaspoonful each of cloves and salt, six gratings of nutmeg, two tablespoonfuls of molasses and half a cupful of sugar. When cold form into small patties, dust with flour and fry brown; serve hot. This is a favorite Porto Rican dessert.

SUCCOTASH

Succotash.—Take equal quantities of shelled lima or butter beans and corn cut from the ear, having first cooked and seasoned them separately. Or cut the raw corn from the ear by scoring each row and pressing the pulp out with the back of a knife, and when the beans are nearly soft add the corn and cook fifteen minutes. Add cream, butter, salt and pepper.

PEAS

Peas in Toast Cases.—Pour the contents of a can of peas into a colander, drain, place in a saucepan with just water enough to cover and cook till very tender. Season with one-half teaspoonful of salt

and three or four dashes of pepper. Add one cupful of milk or thin cream and thicken with a level tablespoonful of flour that has been cooked in one tablespoonful of butter. Cook two or three minutes and turn into the cases, which have been prepared as follows: Cut five slices of bread (small loaf) one-half inch thick, and five slices one inch thick. Make them square or round, but of uniform size. Toast nicely; cut the centers from the five thick slices, leaving a half or three-fourths inch wall; butter all well. Form the cases on a hot platter by placing a ring of toast upon each whole slice; place in the oven for a moment, and when ready to serve fill the cases; then garnish the platter with strips of well-cooked and seasoned carrots.

CHICORY

Chicory with Cream Sauce.—Select two heads of chicory, throw away all the outer leaves, wash them in two waters, blanch in boiling salted water, remove in ten minutes and cool in fresh water. Drain, chop and cook for fifteen minutes in two ounces of butter. Pour over one glassful of cream, dust with a saltspoonful each of salt and mace and serve with croutons.

LENTILS

Lentils.—Cover a pint of cleaned lentils with cold water and boil one hour. Cut half a pound of salt pork into thin slices and fry it with four large sliced onions in butter until tender and brown. Stir in two teaspoonfuls of browned flour and two cupfuls of beef stock; cook until thick; add two tablespoonfuls of vinegar, one teaspoonful of salt and a little pepper. Drain the water from the beans, cover again with cold water and boil until soft, then add the meat mixture. Simmer ten minutes and serve.

BEANS

Boston Baked Beans.—Soak one pint hand-picked navy beans over night in cold water; in the morning drain off the water and boil in fresh water for ten minutes, adding a teaspoonful of soda. Drain off this water and put the beans in stone jar, one that is smaller at the top if you have such a one. Add one-half pound pickled pork cut in strips, one-half cup molasses, one-half teaspoonful pepper. Cover with boiling water and bake all day in hot oven, adding water occasionally—always keeping the pork and beans covered.

Pea Beans Baked with Tomatoes.—Soak one pint of pea beans in cold water over night. In the morning wash and rinse carefully and parboil until soft enough to pierce with a pin and no longer. Change the water several times, adding to the last a teaspoonful of soda, let boil, drain and rinse. Put half the beans into an earthen bean-pot. Pour scalding water over one-fourth a pound of salt pork, scrape thoroughly, then score the rind for cutting in half-inch slices. Put this into the bean-pot and cover with the remainder of the beans. Have ready three pints of tomato purée (stewed tomato passed through a sieve fine enough to retain the seeds). Sprinkle the beans with a generous teaspoonful of salt, same of mustard and two tablespoonfuls of sugar, then add the tomato to cover. Bake about eight hours in a moderate oven. Keep the beans covered with the tomato, also the cover on the pot until the last hour. During the last hour remove the cover and draw the pork to the surface to brown.

Lima Beans.—Wash thoroughly one coffee cupful of dried lima beans, soak over night in one quart of water in which one saltspoonful of soda has been dissolved. Next noon rinse well, put to cook in one quart of tepid water, let simmer slowly two hours, then add a scant teaspoonful of salt, more water if necessary, and let simmer another hour, when they should be tender. Drain off any remaining water, add a teaspoonful of butter, a saltspoonful of pepper and if convenient three tablespoonfuls of cream. Mix carefully, so as not to break the beans, cover, place on back of stove for five minutes, then serve in hot dish.

Boston Bean Croquettes.—To one and a half pint beans previously cooked just sufficiently to pass through a colander, add one tablespoonful of vinegar, one of molasses and one of butter, a pinch of cayenne and half a teaspoonful of salt; mix well, and when cold form into balls or croquettes, dip in egg and crumbs and fry in very hot fat. These can best be handled in a wire basket, but are not difficult to handle without.

Curry of Beans.—Chop one small onion and fry a pale brown in a tablespoonful of butter. Add one teaspoonful of curry-powder and two teaspoonfuls of milk, and mix smooth. Add one quart of baked beans and the juice of half a lemon. When steaming hot dish in a border of boiled rice.

Bean Rarebit.—Melt two tablespoonfuls butter, add one-half tea-

spoonful salt, one-quarter teaspoonful paprika, and one cup cold baked beans rubbed through a strainer. Mix well, and when thoroughly heated add gradually one-half cup milk, then two-thirds of a cup of soft cheese finely cut, and three-quarters teaspoonful Worcestershire sauce. Stir until the cheese is melted, and serve very hot on zepherettes. This is a novel way of serving left-over beans, and may be prepared in a chafing-dish if desired.

EGG-PLANT

Fried Egg-plant.—Cut the plant in slices about one-third of an inch thick. Pare these and lay in a flat dish. Cover with boiling water, to which has been added one tablespoonful of salt for every quart of water. Let this stand one hour. Drain and pepper the slices slightly and dip in beaten egg and bread crumbs (two eggs and a pint of crumbs for a good-sized plant). Fry in boiling fat for eight or ten minutes. The slices will be moist and soft when done. Or the slices can be seasoned with pepper, and cooked in just enough pork fat to dry them.

Stewed Egg-plant.—Parboil for ten minutes. Slit down the sides and take out the seeds. Prop open the cut with a bit of clean wood and lay in salt and water for an hour. Stuff with a force meat of crumbs, fat salt pork, salt, pepper, nutmeg, parsley and a bit of onion, all chopped. Put on in a cupful of good soup stock and stew, closely covered, one hour, or until very tender. Take up and keep hot in a deep dish. Stir a lump of butter rolled in flour into the gravy; boil up and pour over the egg-plant.

Stuffed Egg-plant.—Wash and dry two good-sized egg-plants and partly cut off the top of each, leaving it attached at one side so as to serve for a lid. Put one teaspoonful of finely chopped onion in a saucepan with one tablespoonful of butter and fry quickly until it begins to color; add six chopped mushrooms and one tablespoonful of sausage meat; season with salt and pepper and cook for three minutes longer. Add the inside of the plant, which has been scooped out and finely chopped, two tablespoonfuls of bread crumbs, and one teaspoonful of finely chopped parsley. Mix well and cook for five minutes longer. When cold stuff the shells with the mixture, replace the lids and bake for twenty-five minutes in a moderate oven.

Egg-plant Fritters.—Boil the egg-plant until tender, then peel, drain

and chop or mash fine; season with salt and pepper and a little butter while hot; then set aside until cold. Mix two eggs beaten with two tablespoonfuls of flour to a smooth batter; there should be just enough flour to hold the mixture together. A half teaspoonful of baking-powder may be added to the flour if you want the fritters puffy. In this case fry in deep hot fat; otherwise fry them on a hot griddle the same as batter cakes.

Escalloped Egg-plant.—Pare a nice, fresh, ripe egg-plant and divide into halves or quarters according to size. Put into a kettle of boiling water and cook until tender enough to be pierced very easily with a fork. Turn into a colander and drain. Then place in a heated bowl and beat with a silver fork until well broken up. Measure the pulp and to every cupful add an equal quantity of bread crumbs, a tablespoonful of thick sweet cream, a seasoning of pepper and salt to taste. Last of all add one egg well beaten. Turn all into a baking-dish, sprinkle the top with bread crumbs and place in a hot oven long enough to brown and set the egg, but not long enough to cook dry.

SALSIFY OR OYSTER-PLANT

Oyster Puddings may be made of this plant, and other dishes prepared which not everybody will be able to distinguish from real oyster luxuries, so closely related are their flavors. When the flower stalks are used they should be prepared like asparagus. This part of the plant is, however, little used. The roots are the portion for which it is usually cultivated. The root is a rather difficult one to dress for cooking, as it is filled with a milky juice that is sticky and darkens the hand unless the utmost care is exercised in handling. This milky juice, however, is the most valuable portion, and on account of its flavor and medicinal qualities should not be lost. On this account where the roots are smooth and of good size they may be boiled without scraping, and the skin removed afterward.

Escalloped Salsify.—Boil the salsify and slice into thin pieces. Crumble a quantity of cracker crumbs. Put in a basin a layer of cracker crumbs, then a layer of salsify; spread over this bits of butter and sprinkle with salt and pepper. Repeat until the dish is full. Moisten with milk or cream and bake. Serve hot.

Salsify Croquettes.—Boil the salsify, slice lengthwise, and cut into pieces one and one-fourth inch long. Roll these pieces alternately

in egg and bread or cracker crumbs until thickly coated. Fry brown in hot butter or lard. Serve hot.

Salsify Croquettes—Another Recipe.—Boil the salsify, mash, season with butter, pepper and salt, roll in egg and bread or cracker crumbs. Fry brown in hot butter or lard and serve hot.

Creamed Salsify.—Boil the salsify in milk rich in cream, putting in some butter and sprinkling with pepper and enough flour to make the milk of about the consistency of a thick paste. The tubers should be thoroughly done in order to eliminate that crispness that is foreign to oysters.

Salsify in Cream Sauce.—Wash and scrape one dozen salsify roots, boil tender in salted water, drain, place in hot dish and pour over a teacupful of hot cream, a teaspoonful of minced parsley and a dessertspoonful of butter. Treated in this way salsify is a fine substitute for cauliflower.

LETTUCE

Cooked Lettuce.—Select nice heads, cut the roots off, pick away any poor leaves and then tie the tops so they will keep their shape well; put in a dish with some good stock, cover closely and cook until tender. Drain the lettuce and thicken the stock in which it was cooked with either flour or corn-starch; pour this dressing over the lettuce and serve hot. Of course the amount of seasoning needed depends on the way the stock was seasoned.

Inferior heads, or the lettuce which does not form heads, is very nice if cooked just like spinach and dressed with cream. Some varieties which have large white veins and mid-ribs may be made to serve a double purpose. Strip out the thin parts of the leaf for use in the salads and then cook the stems and dress them just like asparagus. It will make a substitute for asparagus which will go unsuspected with a good many people.

Mock Artichokes.—The heart of lettuce, when nicely cooked, makes a dish every bit as acceptable as the more rare artichokes. Take half a dozen heads of lettuce and take off the leaves to use for salad or sandwiches. Cut the stalk in good sized pieces, perhaps two inches long, and put into boiling salted water. Boil for twenty minutes and serve with a smooth white sauce poured over them. It is very nice to serve them on three or four crisp lettuce leaves.

WATERCRESS

Watercress for Cooking.—When picked and washed the leaves should be taken off so as to do away with the thick stem of the middle of the sprig; it should then be boiled like spinach and rubbed through a wire sieve. It can be served like spinach for dinner or with poached eggs, while for breakfast it forms an excellent mat on which to lay broiled kidneys, a savory omelet, angels on horseback (rolls of broiled bacon with an oyster within each), broiled chicken, etc.

CELERY

Celery can be prepared and served by the recipe used for asparagus. The larger pieces should be scraped, cut in finger lengths, tied in bunches and cooked until tender in boiling water. Drain, throw into cold water, then return to salted boiling water and heat it through again. When the bunches are untied the individual portions should be put on squares of toast and a white or Hollandaise sauce poured over them. If a white sauce is to be used a little of the celery water added to the milk for the sauce helps the flavor greatly. To stew celery in the usual way of serving, it should be cut in inch pieces, boiled in salted water until tender, thoroughly drained and mixed with a white sauce.

Celery au Jus.—Cut the heads of the celery into pieces six inches long, leaving them attached to the root. Remove the coarse branches and trim the roots neatly; parboil it for five minutes. Make a brown sauce, using two tablespoonfuls of butter and flour, one teaspoonful of salt and one-quarter teaspoonful of pepper. Add two cupfuls of stock when the sauce is well browned and in this place the bunches of celery. Cover and cook very slowly for twenty-five minutes. Remove the celery and place it evenly on a dish. Stir in the gravy and pour it around the celery.

Minced Celery with Egg.—Scrape and wash the celery and cut into half-inch lengths, having first made crisp in ice-water. Rub the yolks of two hard-boiled eggs to a paste with a tablespoonful of oil, add salt, pepper, a little powdered sugar, vinegar to make the mixture liquid and pour over the celery. Serve as soon as mixed, as the vinegar has a tendency to toughen the celery. Celery can also be served with a mayonnaise or boiled dressing.

RICE

Rice should always be washed in several waters until all the floury coating is removed, as this makes it pasty. It may be cooked in a double boiler or in a large saucepan filled with salted boiling water; place over the hottest part of the range so that it will boil violently. The rice should be sprinkled in slowly so as not to stop the boiling, and it should cook fifteen or twenty minutes uncovered. The water should be drained off, the rice sprinkled with salt, the pot covered with a napkin, using only one thickness, the saucepan set on the side of the range so that the rice can steam out thoroughly, or the rice may be turned into a colander to drain, then placed in an open oven to dry. Rice cooked in this manner can be served in place of potatoes. It is also excellent served with tomatoes. To a cupful of boiled rice add half a cupful of strained tomato sauce which has been well seasoned with butter, salt and pepper. Mix lightly with a fork so as not to mash the grain. Serve as a vegetable or an entrée.

Parched Rice.—Prepare according to the foregoing recipe. Let it get cold, then separate the grains lightly with a fork on a hot dish. Put into a frying-pan with just enough butter to cover the bottom of the pan. When it is hot add a little of the rice at a time and fry it a delicate color. Shake the pan constantly to keep the grains separated. Remove the rice as it is done and spread on a paper to dry in an open oven.

Rice Croquettes.—One cupful of boiled rice, one teaspoonful of salt, a little pepper, two tablespoonfuls of butter, half a cupful of milk, one egg, one tablespoonful of sugar. Put the milk on to boil and add the rice and seasoning. When it boils up add the egg well beaten. Stir one minute, then take off and cool. When cold shape and roll in egg and cracker crumbs and fry a light brown.

Rice à la Princess.—Two cups of boiled rice, two eggs, half a cup of milk, pepper and salt, a boiled sweetbread minced fine or any cold meat minced and worked to a paste, with the pounded yolk of two boiled eggs, and well seasoned with salt, cayenne and a little lemon. Mix the eggs and milk and salt with the hot rice and stir in a saucepan until stiff. Let it get cold, make into thin round cakes, inclose a spoonful of the meat paste in the center of each and roll the rice ball round. Dip in beaten egg, then in cracker crumbs, and fry in lard. Drain and serve very hot.

Sausage and Rice—A Southern Recipe.—There is a good Southern breakfast dish which is prepared as follows: Wash and boil one and one-half cupfuls of rice. Fry one pound of sausage very brown, and add it to the rice when it is about half done. Season with salt and plenty of red pepper.

Rice Balls for Breakfast.—Rice balls are made in this way: Cook one cupful of rice until it is done, then set it aside to cool. Mix together one cupful of chopped beef, three chopped onions, three or four cold Irish potatoes sliced; add enough eggs to allow this to be made into small balls, cover the balls with the rice, tie them in squares of cheese-cloth and let them boil for thirty minutes. They are to be served with good meat gravy.

Rice and Cheese.—Boil a cup of rice in a quart of water slightly salted, and when half done add two tablespoonfuls of butter. By the time the rice is soft the water should have been soaked up entirely and each grain stand out whole in the mass. The rice should not be stirred but the saucepan should be shaken. Stir into the rice at this point two tablespoonfuls of grated cheese; salt and pepper to taste. Toss up with a fork until the cheese is dissolved and serve.

Fried Rice with Cheese.—Cut slices of cold boiled rice and fry brown in butter. Sprinkle the hot slices with grated cheese, which may be a combination of dairy and Parmesan. This is excellent, served with fried tomatoes. Slice the tomatoes in rather thick slices, sprinkle with bread crumbs and fry carefully so as not to break the slices. After lifting them out of the frying-pan pour in a little cream, stir for a moment and pour the gravy over the tomato.

Spanish Rice Served with a Roast.—Put two tablespoonfuls of drippings into a saucepan and allow them to bubble. Add a half cupful of well washed rice and toss until browned. A sliced tomato and minced onion and a bit of garlic are also browned in the drippings. Cover with hot water, season with salt and pepper and cook thoroughly, adding more water if necessary. Do not touch the rice until it is done.

Casserole of Rice and Tomato.—Boil one cup of rice until tender in hot water to which has been added a little salt. Shake the saucepan from time to time. Drain dry, add a very little milk in which has been stirred a beaten egg, a teaspoonful of butter, a little pepper and salt. Simmer for five minutes, and, if the rice has not absorbed all

the milk, drain it again. Pile it around the inner edge of a flat dish, smooth it neatly, rounding the top into a sort of fence. Brush it over carefully with the beaten yolks of two eggs and set in the oven until firm. Drain more than half the juice from a can of tomatoes, season with a little chopped onion, pepper, salt and sugar. Stew twenty minutes. Stir in a tablespoonful of butter and two tablespoonfuls of fine bread crumbs. Stew three or four minutes to thicken it well and pour it within the hedge of rice.

MACARONI AND SPAGHETTI

Macaroni can be served either as a vegetable or an entrée. The best macaroni has a fine, close grain and a clear, yellow color. It is usually mixed with cheese, tomato and various sauces. When macaroni is to be boiled in long pieces to be used for timbales, hold the pieces in a bunch and lower them gradually in hot water; they will quickly soften and can be turned into a circle in the saucepan. They must be removed when tender and not cooked until they lose their form. When done drain off the hot water and pour on cold water for a few moments; then lay them straight on a cloth. Spaghetti is a small form of macaroni. It is boiled until tender in salted water and served in the same ways as macaroni.

Macaroni Baked with Cheese.—Take as much macaroni as will half fill the dish in which it is to be served; break it into pieces two and a half or three inches long; put it into salty, boiling water and boil twelve or fifteen minutes, or until the macaroni is perfectly soft. Shake the saucepan frequently to prevent the macaroni from adhering to the bottom; turn into a colander to drain; then put it into a pudding-dish with butter, salt and grated cheese; cover it with milk and bake it until the milk is absorbed and the top brown; a tablespoonful or so of melted butter should be used to half a pound of macaroni.

Macaroni au Gratin.—Boil the macaroni as directed, drain it in a colander, and then return it to the saucepan with butter and grated cheese; toss it over the fire until the butter is absorbed and the cheese melted; serve at once before the cheese has time to harden. A good mixture is made of Parmesan and Swiss cheese. Macaroni is also excellent served with tomato sauce.

Macaroni in Bread Crumbs.—Take one-third package of macaroni

and break into two-inch lengths. Boil steadily from a half to three-quarters of an hour in plenty of salted water. When perfectly tender drain; then add one tablespoonful of butter and stir until macaroni has been coated with the butter. Now add one and one-half cups of browned, grated bread crumbs and serve as a vegetable.

The Italian Way of Serving Spaghetti is to wash and parboil half a pound of it, drain it and add one pint of stewed tomatoes, mixed with a little stock or beef extract, some chopped onion or herb, also a small piece of ham cut in pieces. This must be cooked for twenty minutes; then strain and season before pouring it over the spaghetti. It is much improved if a clove or garlic is added to the sauce; this sauce should be stirred well over the spaghetti and grated Parmesan cheese should be served with it.

Macaroni Timbale.—Cook until tender in salted water long pieces of spaghetti; put into the water slowly, and it can then be turned so it will not break; lay the pieces straight on a napkin to cook; butter well a dome-shaped mold, wind the spaghetti around the mold, holding it in place, as you proceed, with a layer of forced meat; fill the center with boiled macaroni and cheese; mix well with a reduced bechamel sauce, or fill the timbale with a salpicon of sweetbreads and mushrooms. Make the layer of forced meat thick enough to give the timbales stability. Cover it with a greased paper, stand it in a pan of hot water and toast in a slow oven for thirty minutes.

Macaroni with Rice.—Take one cup of cooked rice, one and one-half cups macaroni (that has been boiled in salted water), one pint of cream sauce, one-half cup of grated cheese. Into the cream sauce put one-half the cheese. Grease a pan with butter, put a layer of macaroni, then one of sauce, then one of rice, then sauce, repeat; lastly put a few cracker crumbs with the remainder of cheese and sprinkle on top. Bake in a hot oven about twenty minutes.

GREEN PEPPERS

Stuffed Peppers can be served as a vegetable or as an entrée. Use peppers of uniform size, cut a piece off the stem end, or cut them in two lengthwise and remove the seeds and partitions. Put them in boiling water for five minutes to parboil; fill each one with a stuffing made of equal parts of softened bread crumbs and minced meat well seasoned with salt, butter and a few drops of onion juice. Place them

in a baking-dish with water, or better, stock half an inch deep, and bake in a moderate oven for half an hour. Remove them carefully to another dish.

Green Pepper Salad.—Two green peppers, a pound of cold veal and a slice of boiled ham and bologna sausage and the grated pulp of an onion. Cut the peppers and meat fine and mix them with the onion, cover with a French dressing made with Tarragon vinegar, and let it stand a couple of hours. Drain thoroughly and serve with mayonnaise dressing.

Peppers Stuffed with Mushrooms.—Wild mushrooms may be used. Wash, cut off the stems and peel the tops of the mushrooms, drop each one as soon as prepared into water to which has been added the juice of half a lemon. When all are ready to cook, drain and put into a saucepan. To one pint of mushrooms add two tablespoonfuls of butter, a saltspoonful of salt and one tablespoonful of lemon juice. Cover closely and let simmer fifteen minutes. Thicken with a dessertspoonful of flour and add slowly three tablespoonfuls of cream and a grate of nutmeg. Cut out the stem ends and remove the seeds of five peppers, either green or red; fill with the mixture and serve.

CUCUMBERS

Stewed Cucumbers on Toast.—Peel and cut into half-inch slices four large cucumbers, cover with boiling salted water, let boil fifteen minutes, drain. Put one and a half teacupfuls of milk in a pan, adding a teaspoonful of salt, one tablespoonful of butter and two dashes of pepper; as soon as it boils up put in cucumber slices, let them get hot and serve on toast. Garnish with small red radishes.

Cucumber and Sweetbread Salad.—Drop the sweetbreads into cold water, changing the water as often as it becomes discolored; when quite white drain and place them in a saucepan; add one slice of onion, a blade of mace, one-half of a teaspoonful of salt and sufficient boiling water to cover. Simmer slowly for twenty minutes and then drop into cold water until chilled; drain, and with a silver knife cut into half-inch dice, add an equal measure of dice and drained cucumbers, mixed with a mayonnaise or cream dressing and serve in nests of lettuce and cucumber boats. To prepare the boats, cut the cucumbers in halves lengthwise and scoop out the centers; trim each end

into a point, fill with cracked ice and drop into ice water until needed; let them become very crisp. Dry thoroughly before using and fill them with salad.

MUSHROOMS

Stewed Mushrooms.—Cut the stems off just below the frill, peel and place them gill side up in a granite pan. Sprinkle a little salt over the gills and let them stand an hour or more, cover with perfectly sweet cream or rich milk, rub a little flour into a generous lump of butter, add to the mushrooms and cream and set the whole on the stove where they will cook gently for fifteen or twenty minutes. Serve immediately.

Baked Mushrooms.—Peel and stem the mushrooms. Sprinkle a little salt and pepper on the gills and place them gill side up in a granite pan. Put a small lump of butter on each, cover the pan with a granite top or plate and set in a hot oven for fifteen or twenty minutes. Serve in dish in which they are cooked.

Baked Mushrooms—Another Recipe.—Peel and stew large mushrooms. Line a deep baking-dish with thin slices of toast, each of which has been dipped for an instant in seasoned beef stock. Fill the dish with layers of mushrooms, sprinkling each layer with salt, paprika and bits of butter. When the dish is full pour over all a gill of stock and bake covered for twenty minutes. Uncover and cook for five minutes more before sending to the table.

Fried Mushrooms.—Peel and stem the largest mushrooms you can get. Have your skillet smoking hot. Put in enough butter to keep the skillet from getting dry and place your mushrooms gill side down in the skillet. As soon as they are nicely browned turn and sprinkle a little salt over them. As soon as they are a nice brown on each side take up and pour the gravy over them. Put a small lump of butter on the gill side of each; send to the table immediately. Always have a hot platter on which to dish your mushrooms.

Mushrooms and Macaroni.—Cook a quarter pound of macaroni until very tender in salted water and reserve. Put in a stew-pan a table-spoonful of butter, a pint of wild mushrooms that have been washed, peeled, then soaked in milk for two hours; strain and pour the milk (a cupful) on the macaroni, adding to it a saltspoonful of salt, a table-spoonful of grated cheese, a slice of lemon and a bay leaf. Reheat,

adding a gill of cream and the mushrooms, which have been dusted with salt and pepper, lifting the latter through very carefully.

Mushroom Sandwiches.—Mix with one cup of boiled, chopped button mushrooms the same quantity of cold cooked tongue, which has been chopped fine; season with one-half teaspoonful of salt, dress with French mustard. Spread between thin slices of buttered brown bread lined with crisp lettuce leaves and put together in pairs.

CHESTNUTS

Scalloped Chestnuts.—Hull one pint chestnuts; place in bowl and pour boiling water on them to take off skins. Boil until soft; mash fine, add lump of butter size of egg, one-half tablespoonful celery chopped very fine, one hard boiled egg chopped very fine, one beaten raw egg, saltspoonful salt, dash pepper. Mix thoroughly. Have clean and dry clam shells, butter the inside, fill them to the edges. Make a hole in the middle in which to place a large oyster. Bake until a light yellow. Serve in shell with lemon. Deep oyster shells or scallop shells will do.

Chestnut Sandwiches.—Simmer one large cupful of chestnuts in salted water until tender. Drain them and mash to a smooth paste, season with a teaspoonful of lemon juice, a grating of nutmeg and enough whipped cream to make a smooth paste, which will spread easily. Butter slices of brown bread, spread with the mixture, press together and trim nicely. A lettuce leaf may be placed between the slices with the nut mixture.

BREAKFAST CEREALS

Farina.—To a pint of boiling water add half a pint of farina, and when this boils and is very thick add a pint of milk, cook for ten minutes longer in a double boiler and serve with either cream or milk. Season the water in which it is cooked with one teaspoonful of salt.

Hominy Patties.—To a pint of cold boiled hominy add two tablespoonfuls of melted butter and mash fine; to this add two well beaten eggs, saltspoonful of salt and dash of paprika and a little milk if necessary to mold into small pats. Place these on a buttered pan, dust with grated cheese and brown in a hot oven.

Oatmeal.—To obtain the fine nutty flavor of oatmeal it should be cooked for several hours in a double boiler, after first being brought to the boiling point over the fire. Three cups of boiling water to one of oatmeal and a teaspoonful of salt is the right proportion. It should be cooked the day before needed. Enough for several mornings may be cooked at one time in cool weather, which is the only time that oatmeal should be eaten, on account of its heating qualities. Serve with cream and a very little sugar. Very different from oatmeal as it is usually served.

Oatmeal Sandwiches.—Fine steel cut oats, cooked thoroughly the evening before in double boiler and heated up, without disturbing, in same vessel in morning. They must be dry, so grains will fall apart like rice. Spread large spoonful in individual dish. On this spread spoonful of fruit jam, butter, or preserve that is not too juicy. Many kinds of fruit are suitable. On top put second spoonful of oatmeal, and serve with cream.

Oatmeal in a New Manner.—Boil a pound of oatmeal in four quarts of pot liquor for one hour, adding a tablespoonful of salt, a salt-spoonful of pepper and an ounce of butter. Stir this frequently to prevent it from scorching.

Cook Your Oatmeal Thoroughly.—A physician asserts that nothing is more ruinous to the digestion than breakfasting on half-cooked cereals. Any cereal, according to him, ought to be home cooked for at least five hours. This can easily be done over night. Long cooking also makes the food more agreeable to the palate.

EGG SUGGESTIONS

Food Value of Eggs Compared with Meat.—Six large eggs will weigh about a pound. As a flesh producer one pound of eggs is equal to one pound of beef. About one-third of the weight of an egg is solid nutriment, which is more than can be said of meat. There are no bones and tough pieces that have to be laid aside. Practically an egg is animal food, and yet there is none of the disagreeable work of the butcher necessary to obtain it. Eggs at average prices are among the cheapest and most nutritious articles of diet. Like milk, an egg is complete food in itself, containing everything that is necessary for the development of a perfect animal. It is also easily digested if not damaged in cooking.

How to Take Stains from Discolored Eggs.—The stains may be removed from discolored eggs by soaking a short time in vinegar and then washing them.

To Detect Bad Eggs.—To tell whether eggs are good or bad put them in water. If the large end turns up they are not fresh. This is an infallible rule.

Here is a Suggestion about frying eggs: Have the lard hot and then put in the eggs, then pour in one-fourth cup of water; cover and the eggs will cook without dipping the lard on top of them.

The Egg Yolks Left from cakes may be kept by pouring cold water over them to exclude air, and used for dark cake, omelets or mayonnaise when needed. They will keep fresh a surprising length of time in a bowl of water.

The Yolk of an Egg Well Beaten is a very good substitute for cream in coffee. An egg will season three cups.

Eggs Boiled Twenty Minutes are more easily digested than if boiled ten. They are dry and mealy and are readily acted upon by the gastric juice.

Hoarseness and Tickling in the Throat are relieved by a gargle of the white of an egg beaten to a froth with a tumblerful of warm sweetened water.

Beat an Egg Fifteen Minutes with a pint of milk and a pint of water, sweetened with granulated sugar, bring to boiling point, and when cold use as a drink. It is excellent for a cold.

EGG RECIPES

Eggs on Toast.—Have ready on hot platters as many slices of buttered toast as wanted. Take sufficient amount of cream to cover the toast; put on stove in saucepan and heat. Break into this as many eggs as slices of bread. Cook until eggs are well set. Lay an egg on each slice of toast. Place on each a bit of butter. Season with salt and pepper. Then pour the cream over all and serve immediately.

Egg Chops.—Take five hard boiled eggs, put yolks through sieve and chop whites. Cook one tablespoonful of butter with two of flour and add one cup of milk; season with pepper and salt. When smooth and thick take from fire, and when nearly cold add yolks and whites of eggs and a little onion juice. When cold mold into

shape of chops, roll in beaten egg and crumbs, fry in deep fat until a delicate brown. Arrange on chop platter and pour bechamel sauce around them.

Egg Omelet.—Take three eggs, beat the whites and yolks separately; add to the yolks one cup milk and one heaping teaspoonful flour, one-half a teaspoonful salt; then stir in the whites, which have been beaten as for cake. Melt a tablespoonful of butter in a spider, pour in, and let it get a rich brown on the bottom, then set in oven a few minutes.

Baked Omelet.—Dissolve teaspoonful of corn-starch in a gill of milk and add a pinch of salt. Beat six eggs light—yolks and whites separately—add the corn-starch and the milk to the yolks, lightly fold in the stiffened whites and turn into a greased and heated pudding-dish. Cook in a hot oven for ten minutes. Serve immediately.

Salt Pork Omelets.—The pork must be cut into thin strips and freshened in milk, then fried crisp, and drained. The omelet is made as usual, and the strips of fat pork folded into it.

Snow Omelet.—Put a pint of milk in a double boiler. When hot stir in a half cupful of white corn-meal, cook for five minutes and take from the fire; add a tablespoonful of butter, one-third teaspoonful of salt and one cupful of seasoned and tender boiled rice that has been made smooth in a little of the hot mush; mix well. Beat the whites of five eggs to a stiff froth, stir them lightly into the mixture, turn into an oiled baking-dish, sprinkle over with fine bread crumbs and bake in a moderately quick oven for thirty minutes.

Corn Bread Omelet.—Pour one cupful of cold milk over one of crumbed cold corn bread and let it stand five minutes. Add the beaten yolks of three eggs and one-quarter teaspoonful of salt; beat well and fold in lightly the stiffly beaten whites of the eggs. Cook a little more slowly than an ordinary egg omelet, butter and dust with pepper. Fold over and remove to hot platter. Garnish with cress and parsley.

Omelet Maryland.—Chop very fine six olives. Put one dozen pecans through the meat grinder, stir together with the olives and add enough minced breast of chicken to make half a cupful. Just before frying mix this into the beaten yolks of five eggs to which one cup of warm milk has been added. Lastly stir in the five stiffly beaten whites to which one-half teaspoonful of salt has been added before

beating. Put in a very hot spider in which a teaspoonful of butter has been melted. Grind the pepper grinder over it, and serve piping hot as soon as it sets.

Celery and Parsley Omelet.—Into a bowl break six eggs, beating until light and foamy; add a half cup of milk, two teaspoonfuls each of chopped parsley and celery leaves and one teaspoonful of chopped onion, one-fourth teaspoonful of salt and three shakes of pepper. Stir all thoroughly together and pour into a frying-pan in which a tablespoonful of butter is melted and hot. Stir until the eggs become set. Serve on a dainty platter; garnish with parsley sprigs.

Peach Omelet.—Beat the yolks of four eggs until thick, add a tablespoonful each of sugar and lemon juice, the grated rind of a lemon and a saltspoonful of salt. Whip the egg whites to a stiff froth and fold lightly into the other ingredients. Heat a tablespoonful of butter in a frying-pan and pour in the eggs. As the omelet begins to thicken break it in several places with a fork, and when done spread with three peaches, peeled, thinly sliced and sprinkled with two tablespoonfuls of sugar; fold the omelet over and set in a hot oven one minute. Slip on a hot platter and serve.

Strawberry Omelet.—Break four eggs and add a dessertspoonful of sugar and a tablespoonful of brandy. Heat very gently to blood warmth a small cup of strawberry marmalade. Cook the omelet, pour the warmed marmalade on the center, fold, slip to a hot dish and serve.

CHEESE

Cheese Souffle.—Melt in a saucepan two level teaspoonfuls of butter, stir in one heaped tablespoonful of flour, and when smooth add gradually one-half cup of hot milk, one-half teaspoonful of salt and a dash of cayenne. Then stir in one cup of grated cheese, and when melted and smooth remove from the fire and add the well beaten yolks of three eggs. Let the mixture cool and beat the whites of three eggs till stiff and dry. Fold them in lightly and turn the mixture into a buttered baking-dish and bake them twenty-five to thirty minutes. Serve immediately, as like all souffle it falls quickly. When served as a cheese course at a dinner the mixture may be baked in individual dishes or ramekins.

Cheese Sauce.—Melt a tablespoonful of butter, add two level tea-

spoonfuls of corn-starch, mix well and pour on slowly three-quarters of a cup of milk; add half a pound of soft American cheese cut fine. Season with a half teaspoonful of salt and saltspoonful each of mustard and cayenne. Use more salt if liked, and mild cheese is best to use. As soon as the cheese is melted add the beaten yolk of an egg and serve.

A Welsh Rarebit that is made without liquor has a tablespoonful of corn-starch stirred smooth in a tablespoonful of melted butter. Stir in a half cupful of this cream, and as the sauce thickens add half a pound of cheese cut fine, a quarter of a teaspoonful each of salt and mustard and a little cayenne.

Cheese Croquettes.—Grate half a pound of American cheese. Mix in it a scant tablespoonful of butter, a tablespoonful of milk, an egg beaten enough to break it, half a teaspoonful of salt and a dash of paprika. Mix it to a smooth paste and mold it into small croquettes, using a tablespoonful of the paste for each croquette. The above proportions will make eight croquettes. Add a little milk to the yolk of an egg and roll the croquettes in this and then in cracker crumbs. Fry a minute in smoking hot fat. Serve at once.

Cheese Cakes.—Sift a cupful and a half of cottage cheese, add one-third of a cupful of sugar, four tablespoonfuls of cream, one tablespoonful of melted butter, the grated rind and juice of a lemon and three beaten eggs; beat until smooth. Bake in small tins of fanciful shapes, lined with pastry, until the mixture is well puffed. Serve when partly cooled.

BISCUITS AND ROLLS

Tea Biscuits.—Four cupfuls of sifted flour, three teaspoonfuls of baking-powder, one teaspoonful of salt, one tablespoonful of butter. Add the salt and baking-powder to the flour and sift them. Rub in the butter. With a fork stir in lightly and quickly sufficient milk to make a soft dough. The dough must be just stiff enough to roll. Flour the board well, turn the dough onto it and lightly roll it to a thickness of half an inch. Cut it into small circles, brush the top with milk and bake in a quick oven twenty to thirty minutes.

Drop Biscuit.—One pint of flour, one tablespoonful of butter, one saltspoonful of salt, two teaspoonfuls of sugar, one teaspoonful of baking-powder; mix and add one cupful of milk. Drop on buttered

tins, by the spoonful, about two inches apart and bake ten minutes in a hot oven.

Rusks.—One cupful of scalded milk, two tablespoonfuls of butter, three tablespoonfuls of sugar, two eggs, half a cake compressed yeast, half a teaspoonful of salt, flour. Make a sponge consisting of the milk, salt and yeast. When it is full of bubbles add the butter, sugar and well beaten eggs. Stir in enough flour to make a soft dough. Knead it for twenty minutes. Let it rise to double its bulk, then mold it into balls the size of half an egg. Place them rather close together in a baking-tin and let them rise until very light.

Tea Cakes.—Three tablespoonfuls of melted butter, half a teacup of sugar, one egg. Beat together, then add one teacupful of milk, one teaspoonful of soda, two of cream of tartar. Stir to a froth, add sifted flour enough to make a stiff batter. Bake half an hour in a quick oven.

Luncheon Rolls.—Scald half a cup of milk and add to it two tablespoonfuls of sugar and a saltspoonful of salt. Dissolve half a cake of compressed yeast in a quarter of a cup of lukewarm water and add to the milk, when it is lukewarm, a scant cup of flour. Cover, set in a warm place and let rise. Then add two tablespoonfuls of softened butter, a well beaten egg, grated rind of a lemon and flour enough to make a good dough. Set to rise again, and when light roll out to an inch in thickness, cut with small round cutter, place in buttered biscuit-pans, cover and let rise again. Brush with melted butter and milk and bake.

Hot Soda Biscuit.—Take a quart of flour, a little heaped teaspoonful of soda, salt to taste, and a heaping tablespoonful of lard. Make up with buttermilk, knead as little as possible and bake in an ordinary hot stove. They will be done in a few minutes.

English Bun Loaf.—Take a cup of bread dough at the second raising, add half a cup of butter softened, one egg beaten, half a teaspoonful soda dissolved in a little milk, half a teaspoonful ground cinnamon and a quarter of a teaspoonful of nutmeg, half a cup of brown sugar and half a cup of seeded and chopped raisins floured. Knead a few minutes and make into a long loaf or rolls and let stand until very light—about half an hour. Bake in a moderate oven. When done cover with melted sugar.

Banbury Cakes.—Make a nice puff paste, roll it out the usual thick-

ness for pies, then cut into pieces with a large biscuit cutter; pile one tablespoonful of the filling on half of each round of paste, wet the edges and fold the other half over; press edges together; bake in a hot oven for fifteen minutes. Filling for same: Two cupfuls of chopped raisins, one cupful of sugar, one egg, one lemon; mix thoroughly.

German Coffee Cake.—Make a sponge with one quart of warm milk, half a cake of compressed yeast dissolved in lukewarm water and flour; cover and let stand over night in a warm place. In the morning add a scant cup of butter, a level teaspoonful of salt, one cup sugar, half a teaspoonful grated nutmeg and two eggs beaten, with sufficient flour to make a dough as soft as can be handled. Knead well for fifteen minutes and set in a warm place to rise. When light roll out in sheets about an inch thick and let rise to double the bulk. Cover the top with rich sweet or sour cream, sprinkle with sugar and ground cinnamon and bake a light brown. It requires from half to three-quarters of an hour. If the cake browns too quickly cover with buttered white paper. Raisins may be added if desired, and the top covered with chopped, blanched almonds mixed with sugar. If preferred, the dough may be twisted and shaped into rings instead of being baked in sheets.

Another Recipe for Coffee Cake.—The following has been tried and found good: One cup of butter, four and one-half cups of flour, two teaspoonsful baking-powder, two cups brown sugar, one cup of strong coffee (put in cold), one cup of raisins (chopped), one cup molasses, two teaspoonsful of cinnamon, three eggs and one teaspoonful of cloves.

CHAPTER XI

BREAD, MUFFINS, CAKE, PUDDINGS AND DESSERTS

Bread Suggestions—Muffins—Dumplings for Roasts and Soups—Cakes—Gingerbread—Pancakes—Pies—Puddings, Desserts and Sauces—How to Prepare Fruit—Fruit Trifles—Creams, Custards and Puffs—Fruit Flavors—Preserving and Canning—Keeping Canned Fruit—Candies and Sweetmeats—Beverages—Cider, Etc.

BAKING BREAD

As bread is the staff of life, so is the baking of it the acme of cooking. While many families, especially in the cities, depend largely upon the bakers for their bread supply, yet every housekeeper recognizes the necessity of having good homemade bread.

Flour should always be kept dry and sifted. Bread made with milk will be whiter and better than where water is used. The milk should be boiled, not simply heated, and not allowed to be below a lukewarm temperature when mixed with the flour. Milk bread means little or no shortening and less flour is required than in the case where water is used. It also requires less kneading.

One cup of yeast means wet yeast. If dry is used the cup should be filled with warm water. Bread and biscuits should rise in a moderately warm place. If too hot it will be sour. If too cold it will be heavy. If dough should become sour a teaspoonful of soda will help it, but this should only be used in exceptional cases. Bread should rise to twice its original size before it is ready to bake. Make small loaves. If the loaf is too large for the pan it will be a bad shape. A hotter oven is necessary for biscuits and rolls than is required for bread, though the former take a longer time to rise. Mix a little sugar or butter with the rising. This will keep the bread moist. Never put a cloth around bread if it is in a tin box. Baking-powder or other chemicals with salt should be mixed thoroughly with the flour by putting all twice through the sieve together. An even teaspoonful of baking-powder to a cupful of flour is good proportion.

One teaspoonful of soda and two teaspoonfuls of cream of tartar are equal to two teaspoonfuls of baking-powder. Brush the tops of the loaves with butter before putting in the oven. If you wish to give the loaf a glazed appearance brush with beaten egg or sweet milk. Test the oven by putting in a little flour on a tin. If it browns in one minute the oven is at right heat. Keep the heat steady.

Recipe.—Half a cake of compressed yeast, one cake of dry yeast, or one cupful of soft yeast. If either compressed or dry yeast is used mix with warm water. Dissolve two tablespoonfuls of lard and two tablespoonfuls of white sugar in one quart of warm water. Then slowly stir in a pint and one-half of flour. Add the yeast and then a teaspoonful of soda. Beat hard and thoroughly and set to rise in a moderately warm place where the temperature will not fall during the night. In the morning have two quarts of fresh flour sifted into a bread tray adding a teaspoonful of fine salt. Make a hole in the middle of the heap and pour in the risen sponge. Then work the flour down into it with the hands. If it is then too soft add more flour. If too stiff, rinse out the bowl in which the sponge was set with a little lukewarm water and use this. Always flour the hands and knead hard toward the center of the mass which should be frequently turned around. Knead long and briskly. From twenty minutes to half an hour is the right length of time. When the dough is of the right texture cover with a cloth and leave it four or five hours to rise in a warm place. Afterward knead again for ten minutes or so, divide into loaves, place in well greased pans and set the pans in a warm place to rise for an hour. Bake one hour in a moderately hot oven.

MUFFINS

Easy Muffins.—Two cupfuls of flour, one cupful of milk, one level tablespoonful of butter, two eggs (beaten separately), one-half teaspoonful of salt, two even teaspoonfuls of baking-powder. Mix thoroughly the baking-powder and salt with the flour. Stir the milk and yolks together; add the butter, melted, then the flour, and lastly fold in the whipped whites. Turn into hot gem-pans and bake in a very hot oven for fifteen or twenty minutes. Serve immediately.

Bread Crumb Muffins.—To a plain muffin batter add fine bread crumbs, using one-half crumbs instead of all wheat flour.

Rice Muffins.—One pint of milk, one quart of flour, one pint of boiled rice, three eggs, two tablespoonfuls of sugar, one teaspoonful of salt, one of soda, two of cream of tartar. Mix the salt, sugar, soda and cream of tartar with the flour and rub through a sieve. Beat the eggs and add the milk; stir gradually into the flour. When a smooth, light paste add the rice. Beat thoroughly. Bake thirty-five minutes in a buttered pan. Three dozen muffins can be made from quantities given.

Squash Muffins.—Beat two eggs, stir into them one cup of sweet milk, one cup of cooked strained squash, two cups of flour, one teaspoonful of baking-powder, one level teaspoonful of melted butter. Bake in muffin-pans in hot oven thirty minutes. If left-over seasoned squash is used, omit one-half the salt, otherwise use one level-teaspoonful.

Cranberry Muffins.—Sift together two cups of flour, four level teaspoonfuls of baking-powder, half a cup of sugar and one teaspoonful of salt. Beat one egg, add one cup and a half of milk, and stir into the dry ingredients. Stir in also two tablespoonfuls of melted butter or other shortening, and one cup of cranberries, cut in halves. Bake in a hot oven twenty minutes.

Rye Muffins.—One pint of rye meal (not flour), one pint of wheat flour, one pint of milk, half a cupful of sugar, one teaspoonful of salt, one of soda, two of cream of tartar and two eggs. Put the meal in a mixing bowl. Put the flour and other ingredients in a sieve, mix thoroughly and sift. Beat the eggs light, add the milk and pour on the dry ingredients. Beat well. Butter the muffin-tins and bake twenty minutes in a quick oven. The quantities given will make twenty-four muffins.

Rye Muffins.—Two cups of rye flour, one-half cup white flour, one-half cup of any cereal left from breakfast, one tablespoonful sugar, one heaping tablespoonful of butter, one teaspoonful salt and one-half yeast cake dissolved in one and three-quarter cups of water or milk. Beat well and let rise over night. In the morning beat down, put in gem-pans, let rise one-half hour and bake twenty minutes.

Date Muffins.—Yolks of two eggs beaten light and two cupfuls milk; sift three cups flour, add a half teaspoonful salt and three level teaspoonfuls baking-powder before sifting. Stir the milk and eggs into

the flour with a tablespoonful of melted butter and one-half cupful of chopped dates (floured). Beat till smooth and then carefully fold in the whites of the eggs, which have been beaten to a stiff froth. Pour into hot gem-pans, well buttered, and bake in a moderate oven half an hour.

GRAHAM FLOUR RECIPES

Graham Bread.—Scald one and one-half cupfuls of milk, turn into a large bowl and add one cupful of cold water, two tablespoonfuls of molasses and one heaping teaspoonful of salt. Add to this mixture, which should be lukewarm, one-third of a yeast cake dissolved in three tablespoonfuls of lukewarm water, and sift in sufficient Graham flour to make a drop batter. Beat hard until smooth, then set the bowl in a pan of warm water, cover closely and stand it in a warm place until the batter is very light and filled with bubbles. Sift in more flour until you have a soft dough, then turn out on a well floured board and knead until the dough is very smooth to the touch and does not adhere readily to the board or hands. Return to the bowl, renew the hot water, cover as before and stand it aside until the dough has fully doubled in bulk. Divide into two equal parts and knead each well until the air bubbles seem of uniform size, then mold into shape and place in a greased pan. Brush the top with water and let it stand until the dough begins to rise, then bake in a moderate oven. If the pan is of the shape popularly known as "brick loaf" the bread will be done in from fifty minutes to an hour.

Graham Gems.—Two cupfuls of graham flour, one cupful of milk, one cupful of water, two eggs, half a teaspoonful of salt, one tablespoonful of sugar. Mix the dry ingredients together; beat the eggs separately. Mix the milk with the salt and sugar; add the water, then the flour; fold in the whipped whites, put at once into very hot greased gem-pans, filling them half full; bake in a hot oven thirty minutes.

CORN-MEAL RECIPES

Old-time Poppets.—Sift together one teacupful of corn-meal, one teacupful of flour, two level teaspoonfuls of baking-powder, the same of sugar and one-half teaspoonful of salt. Rub in a tablespoonful of butter. Beat one egg until light, add one pint of milk. Turn the

meal, etc., into the milk and beat rapidly three minutes. It may need a little more milk, as all flour does not mix alike; it should make a batter easily poured. Bake in gem-pans in quick oven.

Corn Bread.—For a family of five place two heavy iron or steel spiders in a very hot oven with three or four tablespoonfuls of melted grease; leave them in ten minutes, so that the pores of the spider are greased well to prevent sticking. In the meantime beat two eggs well, pour them into one pint of thick sour milk, cream would be much better, one tablespoonful of salt, one and one-half teaspoonfuls of soda sifted, with corn-meal added last, making the batter quite thin. Put it in the hot spider. Batter being thin and spider hot will make the corn bread turn out not only a lovely brown, but it will be quite as light as sweet cake. Keep hot fire while baking.

Corn Bread—Another Recipe.—One cupful of fine corn-meal sifted, one and one-half cupfuls of milk, two eggs, one tablespoonful of butter, one tablespoonful of baking-powder, teaspoonful of sugar. Scald the milk and pour it onto the sifted meal. Let it cool, then add the melted butter, salt, sugar, baking-powder and yolks of the eggs. Stir it quickly and thoroughly together, then fold in the whites of the eggs beaten to a stiff froth. Bake in a flat pan in a hot oven for thirty minutes.

Pumpkin Corn Bread.—Beat one egg light, add a tablespoonful of sugar, one level teaspoonful of soda dissolved in a little hot water, one pint sour milk, one cup of well-cooked pumpkin, one scant teaspoonful of salt. Stir in corn-meal until quite stiff, turn into hot, well-greased pan and bake forty or fifty minutes in hot oven.

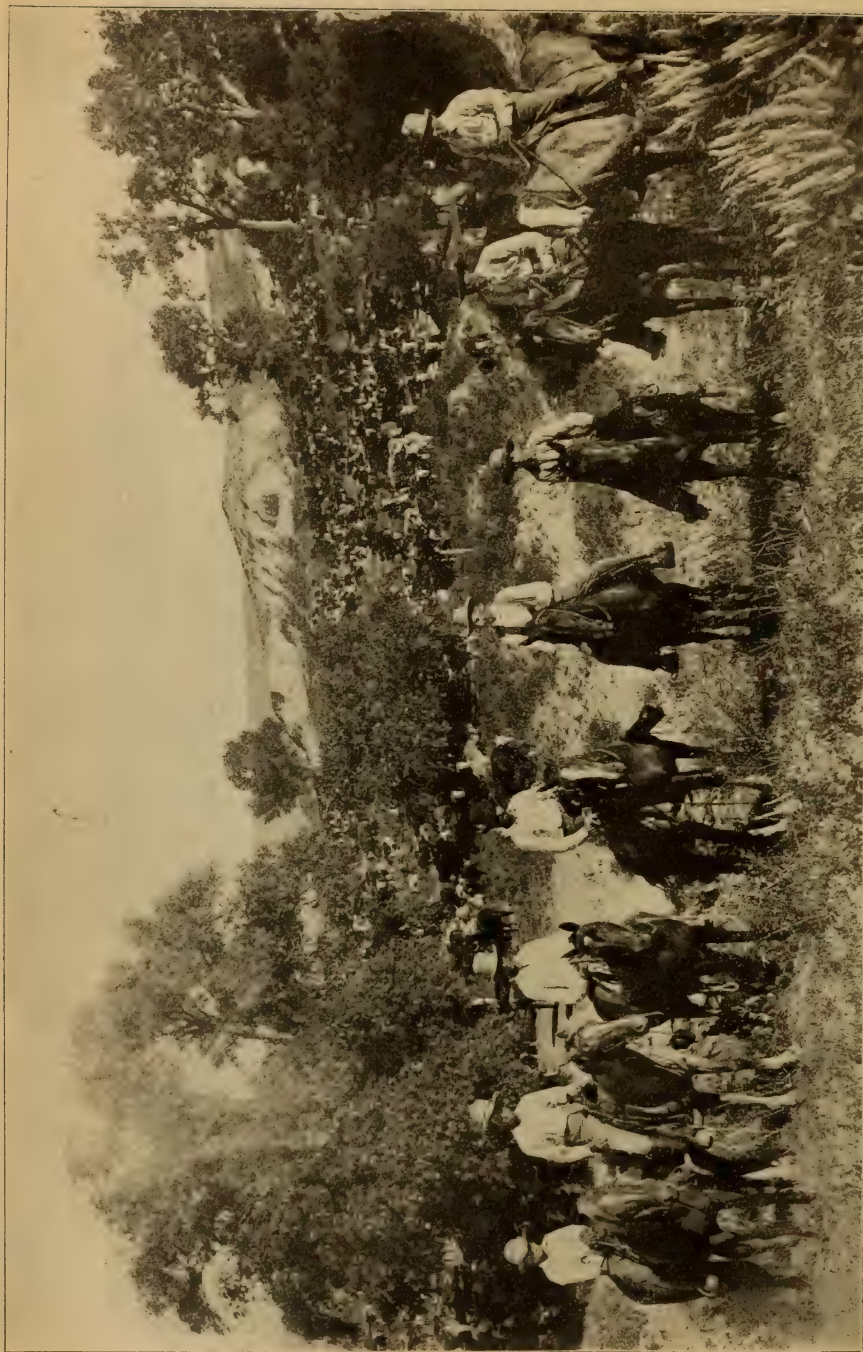
Rice Corn Bread.—One large cup boiled rice, one large cup corn-meal, one pint milk, three eggs, one tablespoonful melted butter, one teaspoonful salt, two teaspoonfuls baking-powder. Bake twenty minutes in quick oven.

Corn Gems.—Two eggs, one cupful of corn flour, half a cupful of white flour, one tablespoonful of butter, one cupful of milk, one teaspoonful of salt, one teaspoonful baking-powder. Break in the yolks of the eggs; add the milk, salt and melted butter; mix them well together, then add the two kinds of flour. Beat the whites of the eggs to a stiff froth; when they are ready add the baking-powder to the flour mixture and then fold in lightly the whipped whites. Turn at once into warm gem-pans, a tablespoonful of batter into each one,



A SOCIAL BREATHING SPELL.

The above is an informal gathering of familiar friends. The cheering cup has already commenced to circulate from the tea stand, presided over by the graceful hostess. It seems likely that the ladies will soon remove their wraps and music will be added to the other charms of this accidental, restful breathing spell.



Courtesy of the Breeder's Gazette

THE COWBOYS AND THEIR COMMAND.

The commanders of the distant herd of cattle, called by courtesy "boys," are evidently as proud of their mounts as of their cows. Such life is calculated to make the real boys hardy men and to keep all the real men, boyish; so "cowboys" is not such a stretch of words, after all.

and bake in a hot oven for fifteen minutes. This recipe can be used for any kind of flour.

MISCELLANEOUS BREAD RECIPES

Oat Cake.—Mix oatmeal which is ground fine with a little salt and enough water to make a stiff dough. Roll it on a floured board to one-eighth of an inch thickness and bake it in one sheet in a slow oven without browning, until dry and hard. It should be gray in color. When done break it into irregular pieces. This is a Scotch dish, and in Scotland is made with fine oat flour, which is difficult to obtain in this country.

Mush Bread.—Heat a pint of milk in a double boiler and when hot stir in enough white corn-meal to make a thick mush. Cover and cook twenty minutes. Take from fire, add one tablespoonful butter, and when cool the yolks of three eggs. Beat whites to stiff froth, add carefully to the mush, adding at the same time one-half teaspoonful salt. Turn into greased baking-dish and bake half hour in a moderate oven.

Cereal Loaf.—Mix cupful each of rice and oatmeal left from breakfast, add one egg, also a little milk if needed; pack in a mold. At lunch time slice, roll in finely sifted meal and fry a crisp brown in a little butter.

Peanut Biscuit.—Mix together dry one quart flour, three teaspoonfuls baking-powder, one-half cupful (roasted) peanuts, chopped, one teaspoonful of salt. Add one-fourth cupful melted butter, rubbing it well with the flour, and sufficient sweet milk to make a soft dough. Knead as little as possible. Bake in a quick oven.

Cheese Cakes.—Roll out puff paste, not very thin; baste it with ice water. Spread half of it with grated cheese. Lap the other half over and pass the rolling-pin over it lightly; cut into strips four inches long and two inches wide. Bake in a quick oven, and sprinkle the tops with grated cheese.

Cheese Fingers.—Make as for rich baking-powder biscuit, with the addition of four tablespoonfuls of grated cheese well rubbed into the flour. Roll out a half-inch thick and cut in narrow strips.

Bread Sticks.—Any bread dough may be used, though that with shortening is preferred. After it is kneaded enough to be elastic cut it into pieces half the size of an egg, roll it on the board into a stick

the size of a pencil and a foot long. Lay the strips on a floured baking-tin or sheet. Let them rise a very little and bake in a moderate oven, so they will dry without browning. Serve with bouillon or soups or with tea.

DUMPLINGS FOR ROASTS AND SOUPS

Norfolk Dumplings.—Make a very light dough with baking-powder, using milk and a little salt. Work this into balls the size of small dumplings, then drop into a pan of boiling water and closely cover. Let the dumplings boil for twenty minutes without removing the lid, then ascertain if they are sufficiently cooked by sticking a fork into one. If the fork comes out clear the dumpling is done. Tear each dumpling apart with a fork as it becomes heavy by its own steam. They may be served with sirup or meat gravy.

Togus Loaf.—One cup of flour, one cup of corn-meal, one-half cup of molasses, one-half cup of sweet milk, one cup of sour milk, one level teaspoonful of salt and the same of soda. Mix the sweet milk, molasses and sour milk together, dissolve the soda in a little hot water and add it and the salt to the milk; stir in the flour and lastly the corn-meal; pour into a buttered brown-bread pan and steam for two hours. Serve hot with the meat.

Never Failing Dumplings.—Ingredients: Flour, salt, butter, baking-powder, egg and milk. Beat one egg well in a cup, then fill up with milk. Stir in one pint of flour, a pinch of salt, one tablespoonful melted butter and one teaspoonful of baking-powder. Drop from spoon on buttered dish and steam tightly covered one-half hour. They are perfect.

Yorkshire Pudding.—One cup of flour into which mix one egg and one-quarter teaspoonful of salt; then thin with milk until about the consistency of thick cream. Bake in an oven, constantly basting with drippings from roast. An old English recipe.

CAKE

A Simple Cake with Many Uses.—Take one cupful of granulated sugar, three eggs and one cupful of flour in which has been sifted one heaping teaspoonful of baking-powder. Beat these ingredients thoroughly together, then add flavoring and a scant half cupful of boiling water. Bake in shallow tins.

Follow this recipe and you will have a very nice sponge cake, which is not so large that it cannot be eaten before it becomes dry. Bake it in layers with jelly between and it is delicious. It can be made into cocoanut cake and into chocolate cake and both cakes are good. Beat the yolk of an egg with sugar and spread it between the layers, making a golden cake. Take one-third of the batter, add two teaspoonfuls of melted butter, a half cupful of seeded raisins, a little clove, cinnamon, nutmeg and allspice and flour until it is stiff as can be easily spread on a jelly tin. Bake the remainder of the batter in two layers. With two fruit layers in the center and frosting strongly flavored with lemon extract between each layer, this makes a layer cake that is fine. This is called "perfection cake" when served in this form. A nice, easily made currant cake may be made by following this recipe; but take double the amount of flour and baking-powder, add a heaping tablespoonful of butter and a cupful of currants and you have just what you want.

Buttercup Cake.—Cream together one-half cup of butter and one cup of sugar. Add one-half cup of milk, two teaspoonfuls of baking-powder sifted in one and one-half cups of flour. Flavor with vanilla. Beat the whites of three eggs to a stiff froth and add last. Stir in lightly. Bake in a moderate oven.

Rich Fruit Cake.—If wrapped in paraffin paper, rich fruit cake may be kept on hand for months. When company comes to tea serve it with canned fruit, and for dinner steam it, serve it with some appropriate sauce, and have the nicest kind of pudding. Here is the recipe: Take three eggs, one and one-half cupfuls of brown sugar, three and one-half cupfuls of flour, one cupful butter, one and one-half cupfuls molasses, one cupful sour milk, one and one-half cupfuls stoned raisins, one and one-half cupfuls currants, one teaspoonful each of soda, cinnamon, cloves and allspice. Stew the fruit slowly for twenty minutes in just enough water to keep it from burning, then drain the liquid off and dredge the fruit with flour. Use the liquid in the cake, stirring it in with the molasses and sour milk. Use the same cup for measuring all the ingredients. The flour must be heaped up in the cup, and the soda must be heaped on the teaspoon, but the spices should not be heaped.

Christmas Fruit Cake.—Take four even cupfuls of good brown sugar, three gills molasses, two cupfuls butter, ten eggs (not beaten separately),

four pounds raisins, two pounds currants, one pound citron, one tablespoonful cinnamon, one nutmeg and one tablespoonful mace. Flavor with rosewater and brandy. Take the weight of the sugar in flour, put this in the oven and brown to the color of the sugar. After stoning the raisins, washing and drying the currants thoroughly and shredding the citron, put all the fruit in a wooden bowl and chop very fine. Then sprinkle and rub thoroughly with flour, being careful to avoid lumps. Stir the cake lightly, sufficient only to mix it, adding the fruit last. Brown a little extra flour for mixing the fruit, line the pans with thick buttered paper and bake slowly in a moderate oven.

Farmer's Fruit Cake.—Chop fine a half pint of dried apples; cover with a half pint of cold water and let them soak over night. The next morning add a cupful of golden sirup; simmer gently for one hour. Stand aside to cool. Beat half a cupful of butter to a cream; add one cupful of granulated sugar. Dissolve a teaspoonful of soda in two tablespoonfuls of water and add it to a half cupful of buttermilk or sour milk; add this to the batter; add two teaspoonfuls of cinnamon, half a teaspoonful of cloves and one egg well beaten. Sift two cupfuls of flour; add a little flour, a little of the dried apple mixture and a little more flour until you have the whole well mixed. The batter must be the thickness of ordinary cake batter. Pour this into a well greased pan and bake in a moderate oven for one hour.

Grandmother's Roll Jelly Cake.—Two eggs, half cup sugar, one heaping teaspoonful baking-powder, scant cup flour, one tablespoonful hot water; beat well and bake in a flat tin. Spread with jelly and roll in a napkin.

Layer Molasses Cake.—One-half cup of brown sugar, one-half cup molasses, two-thirds cup cold water, one egg, one teaspoonful soda, butter or lard size of an egg. Mix these together and add sufficient flour to make as stiff as ordinary cake batter. Try a little before baking the whole. Bake in thin layers and put together with frosting.

Fig Cake.—Any good tender cake recipe baked in three layers with white frosting to cover it. Put together with the following filling: Boil for fifteen minutes or until thick enough to spread, one cup sugar, one-half pound figs, one-half cup water, then add one teaspoonful vanilla.

Molasses Cake.—One-half cupful each of sugar, butter and molasses

(or one-fourth each molasses and maple sirup), one-half cup sour milk, two eggs, one teaspoonful each soda and vanilla, one and one-fourth cups flour. Bake in two layers and put together with frosting.

Cream Cake.—Take three eggs, one cupful sugar, one-half cupful boiling water, two cupfuls of flour, two teaspoonfuls baking-powder and one teaspoonful lemon extract. Beat sugar and eggs well together, then add the water and extract and stir in the flour into which the baking-powder has been sifted. This is baked in three layers and will be found an excellent recipe for any layer cake.

The filling for the cream cake is made by wetting a tablespoonful of corn-starch in a little milk which must be boiling in a basin. Let it boil about two minutes, then remove it from the stove, add a little lemon extract and sugar to taste.

Sunshine Cake.—Yolks of five eggs, whites of seven, one cupful of granulated sugar, two-thirds of a cupful of flour, half a teaspoonful of cream of tartar and half a saltspoonful of salt. Sift four times, measure after sifting both sugar and flour. Beat the five yolks thoroughly. Then set aside while you whip the seven whites very stiff, adding the salt when you begin to whip and the cream of tartar when the whites are half beaten. Beat in the sugar, then the yolks, add a teaspoonful of orange extract, sift in the flour very lightly, pour into an ungreased tube pan and bake in a moderate oven for forty-five minutes.

Orange Cake.—Sift together four times one and one-half cupfuls of flour and one and one-half teaspoonfuls of baking-powder. Beat well two eggs, add one cupful of sugar, one-half a cupful of milk, one tablespoonful of melted butter and the same quantity of orange juice, then the sifted flour and baking-powder. Bake in a square, shallow tin. When cooked split open and fill with a cream made as follows: Into a cup squeeze the juice of one orange, add a tablespoonful of lemon juice and hot water to fill the cup. Put this on to cook in a double boiler, thicken with one tablespoonful of corn-starch wet with cold water, and add the grated rind of half an orange, one teaspoonful of butter, two heaping tablespoonfuls of sugar and the yolk of an egg.

Pittsfield Chocolate Cake.—Two eggs, one-half cupful of butter, one-half cupful of grated chocolate, one cupful of milk, one cupful of sugar, two teaspoonfuls of baking-powder, two teaspoonfuls of vanilla,

one and one-half cupfuls of flour. Cream together the butter, sugar and eggs, add milk, flavoring and chocolate, the latter being melted by standing the cup containing it in hot water; then add the flour. If not of the right consistency add a little more flour. Bake in a single loaf.

Chocolate Éclairs.—One-half of a cup of hot water and one-fourth of a cup of butter boiled together. While this is still boiling add one-half of a cup of flour. Remove from the stove and stir to a smooth paste. Stir in two unbeaten eggs, one at a time, then drop into six buttered muffin-tins and bake twenty-five minutes. Filling: Beat together one-half cup of sugar, two tablespoonfuls of flour, a dash of salt and one egg; then stir into a double cooker containing one cup of hot milk. Cook until quite thick. Before removing from the fire add one-half of a teaspoonful of vanilla and one square of chocolate grated. Allow to cool before filling the éclairs. This filling is also very nice for layer cake.

Hominy Cake.—Stir into one cupful of boiled hominy, while it is still hot, a teaspoonful of butter, one saltspoonful of salt and the yolks of two well beaten eggs; add slowly a cupful of milk, then a half cupful of fine corn-meal; then fold in the whipped whites of two eggs. Bake in a flat tin in a hot oven for twenty or thirty minutes. Cold boiled hominy left over can be used for this dish by heating it with enough water to moisten it.

Potato Caramel Cake.—Cream together two-thirds cup of butter and two cups of sugar, add one-half cup of milk, then one cup of hot mashed potatoes, four eggs one by one, two cups of flour, two teaspoonfuls of baking-powder, two squares of melted chocolate, one teaspoonful each of cloves, nutmeg and cinnamon. Add one cup of chopped nut meats the last thing. Bake slowly.

Rice Cakes and Sauce.—Have ready one cup of rice cooked soft. Wash and rub dry one cup of seedless raisins; dust in flour. Cream three-fourths cup of butter with one cup of sugar, and add four beaten eggs, one scant cup of milk, two and three-quarters cups of flour, in which is put one teaspoonful of baking-powder. After this is well mixed add rice and raisins. Bake in a moderate oven. When ready to serve cut in diamond shapes and run a burning iron around the top edge of each diamond. Serve with a sauce made in following proportions: One pint of water to a teacupful of sugar and tablespoon-

ful of corn-starch. Drop in a cut lemon and piece of cinnamon bark until the water and sugar boil.

Sally Lunn.—Two cupfuls of flour, one cupful of milk, one level tablespoonful of butter, three eggs beaten separately, one-half teaspoonful of salt, two even teaspoonfuls of baking-powder. Mix thoroughly the baking-powder and salt with the flour. Stir the milk and yolks together; add the butter melted; then the flour and lastly fold in the whipped whites. Turn into a cake-tin and bake at once in a very hot oven for fifteen to twenty minutes.

Cherry Sponge Cups.—One pint canned cherries. Put into a saucepan one-half pint cherry juice. When hot add two tablespoonfuls sugar, a saltspoonful of salt and one tablespoonful corn-starch moistened with a little of the juice. Stir until smooth, remove from fire, add the beaten yolks of four eggs and return to the fire for a moment. Beat the whites to a stiff froth and stir in lightly. Place three or four cherries in bottom of buttered cups and fill two-thirds of each with the mixture. Put cups into pan half full of hot water and poach in oven twenty minutes. Serve with any kind of sauce.

Eggless Drop Cakes are very desirable at those seasons of the year when eggs are usually so expensive. Cream together one cup brown sugar and a scant half cup of butter. Add two-thirds cup of sour milk, one-half teaspoonful soda, one-half cup strained coffee, one-half teaspoonful each of cinnamon and ginger, one-half nutmeg grated, one-half cup of raisins seeded, and the same of currants, two and one-half cups of flour, to which has been added one teaspoonful baking-powder. Bake in gem-pans.

Delicious Jumbles.—Mix half a cupful of carefully rendered suet or any of the lard substitutes with two tablespoonfuls of butter. Dissolve a teaspoonful of soda in two tablespoonfuls of water; stir it into one cupful (half a pint) of New Orleans molasses. When foaming add a cupful of strong boiling coffee; add this to the shortening, mix and add a teaspoonful of ground ginger and about three cupfuls of flour or sufficient to make a soft dough. Roll out half an inch in thickness; cut with a round cutter and bake in a moderately quick oven fifteen minutes.

Chocolate Fritters.—Make a stiff chocolate corn-starch pudding as directed on the corn-starch package. Turn it into a shallow, square mold and let it cool. Cut into bars nearly an inch thick; dip each

into beaten egg and then into fine bread crumbs and fry a delicate brown in deep fat. Drain and serve with or without sauce.

Marshmallow Cake.—Use any really good tried recipe for the cake. Filling: One-half pound marshmallows, saltspoonful cream of tartar, two cups granulated sugar, two-thirds cup of water, white of one egg. Boil cream of tartar, water and sugar until it hairs, then pour on the beaten white of egg, after which stir in the marshmallows and beat until smooth. Warm marshmallows enough to soften.

White Icing.—Two cups granulated sugar, two-thirds cup milk. Stir well until it boils, then boil exactly four minutes without stirring. Remove from fire and beat until creamy. Add one-half teaspoonful of vanilla.

Frosting.—Ten tablespoonfuls of powdered sugar, yolks of three eggs, one-half tablespoonful of vanilla. Spread on cake while warm with a silver knife dipped in hot water.

COOKIES

Cream Cookies.—One cupful melted butter, one egg, two cupfuls sugar, three tablespoonfuls of thin cream, one teaspoonful saleratus and flour enough to roll. Bake in a quick oven, being very careful that they do not brown.

Orange Cookies.—One cupful of sugar, two eggs, one-half cupful of butter, one-fourth cupful of milk, two teaspoonfuls baking-powder, flour enough to roll. Bake quickly and when cool cover with frosting to which has been added the juice of one orange.

Cocoanut Cookies.—One cupful of sugar, one-half cupful each of sour milk and butter, one-half teaspoonful of soda, two tablespoonfuls of prepared cocoanut, one egg and flour enough to roll.

Caraway Cookies.—One and one-fourth cupfuls sugar, one-half cupful butter, one-half cupful boiling water, one-half teaspoonful saleratus, two tablespoonfuls caraway seed and flour enough to roll.

Christmas Caraway Cakes.—Into a pound and a quarter of dried and sifted flour stir a quarter of a pound of sugar, half an ounce of caraway seeds, a small teaspoonful of baking-powder and a pinch of salt. Beat to a cream a quarter of a pound of butter, add to it, one at a time, three eggs well beaten, then the flour, etc., very gradually. Roll thin, cut with a round cutter, bake for fifteen minutes in a moderate

oven, then brush the tops of the cakes with a little milk, sifting sugar over.

German Christmas Cookies.—This recipe is given by Mrs. Bayard Taylor in a collection of choice ones: After melting seven and a half ounces of butter pour it slowly into a deep dish, taking care that the sediment is thrown away. Allow the clear melted butter to stiffen, but not to get hard. Then stir it one way to the consistency of thick cream, adding gradually while it is being stirred ten ounces of powdered sugar, four eggs well beaten beforehand, half a teaspoonful of ground cinnamon and fourteen ounces of best flour sifted before being added. When the batter is smooth and light, which it will be after thorough stirring, grease a flat pan with melted butter and drop the batter in by teaspoonfuls. Each cake should be flattened a little with a spoon, and care should be had that they are not put too close together. Bake in a moderately hot oven to a light brown. These cookies are iced as soon as done and returned to the oven long enough to allow the icing to harden.

Ginger Snaps Such as We Buy.—One cup of sugar, one cup of molasses, one cup of butter, one tablespoonful of ginger, one teaspoonful of soda dissolved in a little water and as much flour as can be possibly stirred in (not kneaded); pinch off a piece about the size of a large marble and roll in the hands, leaving a space between them in the pan to allow for spreading, which they will do when warm; bake in a moderate oven until a nice brown and leave in the pan until they cool sufficiently to be snappy, which will be a short time. To warm the ingredients will facilitate the stirring; if dough stands a day it will not matter.

DOUGHNUTS

Sugar Doughnuts.—One cup sugar, one egg, quarter cup thick cream, one and a half cups milk, half a teaspoonful each nutmeg and salt, one teaspoonful soda and two ounces cream of tartar. Mix as soft as can easily be handled, fry in good hot fat. These are light and delicious.

Doughnuts That Will Not Be Greasy.—One-half pint of milk, eight heaping tablespoonfuls of sugar, two eggs, two and one-half tablespoonfuls butter, one-half teaspoonful baking-powder, one-half teaspoonful soda (scant measure), little nutmeg and cinnamon, flour for

a soft dough. Roll out and fry in smoking hot lard. (To measure one-half a spoonful fill the spoon, smooth off the top, then divide lengthwise of spoon—from tip toward handle; take off one-half.)

GINGERBREAD

Fairy Gingerbread.—One-half teacup of granulated sugar, one-quarter teacup of melted butter; stir well. One-half teacup of molasses in which dissolve one teaspoonful of soda, one-half cup of sour milk, one teaspoonful of ginger, one-quarter teaspoonful of cinnamon, one and one-half cups of flour. This will not be very stiff but do not add more flour, or it will not be light and fluffy.

Warm Molasses Gingerbread.—One cupful brown sugar, one-half cupful of butter, one cupful of milk, three cupfuls of flour, three eggs, one tablespoonful of ground ginger, one tablespoonful of ground cinnamon, one teaspoonful of cloves, one teaspoonful of soda. Mix butter and sugar to a cream. Then add the molasses, eggs beaten separately, spices, and then the flour. Dissolve the soda in the milk and put into the batter just before baking.

Almond Gingerbread.—Make an ordinary good gingerbread, having it tender and well spiced, and stir in almonds which have been blanched and split. The combination of flavors is very delicious.

PANCAKES

Pancakes Are Not Indigestible if the batter is properly prepared and the cake eaten when very hot. The batter for pancakes should be smooth and thin enough to run freely when turned onto the griddle. The griddle must be perfectly clean and easily heated. A soapstone griddle is the best, as it holds the heat better and as it requires no greasing. When an iron griddle is used it should also be given time to be evenly heated, and while the cakes are being baked it should be moved so the edges may in turn come over the hottest part of the range. It must be wiped off and greased after each set of cakes is baked. A piece of salt pork on a fork is the best thing for greasing, as it makes an even coating and too much grease is not likely to be used. The griddle should be hot enough to hiss when the batter is turned onto it.

If Plain Pancakes Are Desired they should be made by stirring two cupfuls of milk into two beaten eggs; add enough flour to make a thin

batter; add half a teaspoonful of salt and a heaping teaspoonful of baking-powder. Sour milk can be used, in which case omit the baking-powder and add half a teaspoonful of soda. The baking-powder or soda should not be put in till just before beginning to bake the cakes. The cakes will be better and lighter if the eggs are beaten separately and the whipped whites added the last thing.

Flannel Cakes with Yeast.—Heat a half-pint of sweet milk and into it put one heaping tablespoonful butter, let it melt, add a half-pint cold milk and the well beaten yolks of two eggs, a half teaspoonful of salt, two tablespoonfuls home-made yeast, and flour to make a stiff batter. Let rise in a warm place over night. Before baking add the beaten whites, which have been kept in a cool place during the night. Be sure and make batter stiff enough, as flour must not be added after it has risen. These cakes, half corn-meal and half wheat, are very nice.

Flannel Cakes.—One tablespoonful of butter, one tablespoonful of sugar, two eggs, two cupfuls of flour, milk, one teaspoonful of baking-powder. Rub the butter and sugar to a cream, add the beaten eggs, then the flour, in which the baking-powder has been sifted. Add enough milk to make a smooth, thin batter.

Yankee Buckwheats.—To four cupfuls of sifted buckwheat add a scant cupful of corn-meal and a rounded teaspoonful of salt. Sift these ingredients together and make into a batter by stirring gradually into it five cupfuls of lukewarm water and a compressed yeast cake dissolved in half a cupful of lukewarm water. Beat the batter hard. Cover closely and set to rise in a warm place. Let stand for twelve or fourteen hours. In the morning just before baking the cakes stir an even teaspoonful of soda in a quarter of a cupful of milk and pour this into the batter. Stir this lightly in, just enough to mix the soda, and bake on a hot griddle. Keep the cakes closely covered and send to the table smoking hot.

Bread Griddle Cakes.—Rub one cupful of stale bread crumbs fine and soak them in one cupful of milk for fifteen minutes; then beat until smooth. Add one-half of a level teaspoonful of salt, one tablespoonful of butter melted, and one egg beaten until light. Sift in three-fourths of a cupful of flour, beating the batter well; then quickly stir in one rounding teaspoonful of baking-powder. Bake on a hot griddle and serve with maple sirup.

Adirondack Pancakes.—Bake several pancakes as large as a plate. Butter and cover them with maple sirup; pile them one on another and cut like a pie. In place of the sirup grated maple sugar can be placed between the pancakes on the butter.

Sweet Pancakes.—Three eggs, one cupful of milk, one-half teaspoonful of salt, one teaspoonful of sugar, one-half cupful of flour, half a tablespoonful of olive oil. Beat the whites and yolks of eggs separately, mix them together and add the salt, sugar and half the milk, stir in the flour, making a smooth paste. Then add the rest of the milk and lastly the oil. Beat well and let it stand an hour or more before using. Bake on a hot griddle in small cakes, spread each cake with butter and a little jam or jelly, then roll them, sprinkle with sugar and serve at once.

French Pancakes.—Yolks of two eggs, one tablespoonful olive oil, two cups flour, one-third teaspoonful salt, one teaspoonful baking-powder, milk to make a rather thin batter. Beat the yolks of the eggs until light, add the flour and milk, stir in the oil, salt and lastly the baking-powder, to which has been added a little flour. Beat well for two or three minutes. Grease a small frying-pan and pour in enough batter to cover the bottom, brown on both sides, sprinkle generously with powdered sugar and serve at once.

Corn-meal Pancakes.—Pour a little boiling water on a cupful of corn-meal and let it stand half an hour; add a teaspoonful of salt, a tablespoonful of sugar, one egg and two cupfuls of flour. Add enough milk to make a smooth batter and a teaspoonful of baking-powder just before baking. Instead of white flour, rye-meal may be used, allowing one cupful of rye to one of corn-meal, a tablespoonful of molasses instead of the sugar, and soda instead of the baking-powder.

Rice Pancakes.—Make the same batter as for plain cakes, using half boiled rice and half flour. Any of the cereals—hominy, oatmeal, cracked wheat—can be used in the same way. A little butter is sometimes added to the batter.

Pumpkin Griddle Cakes.—To one cup of pumpkin stewed until dry add one ounce of butter, one rounded tablespoonful of sugar, one-half teaspoonful of salt and one cup of scalding hot milk. Mix well. Beat separately the yolks and whites of two eggs, add the yolks to the pumpkin mixture, then add one cup of flour that has had two teaspoonfuls of baking-powder sifted in it. Add another cup of sweet

milk, and then beaten whites of the two eggs. If necessary add a little more flour, but leave the butter thin enough to run from the spoon. Bake on a well-greased, hot griddle.

WAFFLES

Waffles.—One quart of flour, a small quart of milk and water mixed, two eggs, one teaspoonful of lard or butter, two tablespoonfuls of yeast, one teaspoonful of salt. Beat it very hard until very light. Put the batter in a deep earthen dish to rise over night. Bake without stirring in heated waffle-irons well greased. Serve with cinnamon, sugar or maple sirup.

Corn-meal Waffles.—To one pint of salted corn-meal mush add a tablespoonful of butter, and when it is cold add the well beaten yolks of four eggs. Then beat in one cup of sifted flour to which has been added one heaping teaspoonful of baking-powder. Last of all beat in the stiffly beaten whites of the eggs. Have the waffle-iron very hot.

Whole Wheat Waffles.—Yolks of three eggs slightly beaten, one-half teaspoonful salt, one pint milk, two cups whole wheat flour, two teaspoonfuls baking-powder, one tablespoonful butter. Add last the whites beaten to a stiff froth and bake in waffle-irons. This is the most healthful of all the hot breads.

German Toast.—Take two eggs, beat slightly, add five or six tablespoonfuls sweet milk and a saltspoonful of salt. Dip half slices of bread in mixture and fry in butter. Serve hot with or without sirup as desired.

PIES

Lemon Pie.—Two eggs, one cup of sugar, four tablespoonfuls of butter, one cup of grated apples, the juice and grated rind of one lemon, one tablespoonful of corn-starch, one cup of water. Beat sugar, butter and corn-starch to a cream. Add the other ingredients and bake in a deep pie-plate. When cold frost with the whites of the two eggs beaten very light with two tablespoonfuls of powdered sugar. Flavor with vanilla and set in the oven to brown.

Custard Pie.—Put on the stove to heat one pint of milk. Into a quart bowl break one large or two small eggs, add a half saltspoonful of salt and beat thoroughly. Add one generous half cup sugar and

four grates of nutmeg, stir thoroughly; pour on this the hot milk; let it stand. Meanwhile make the crust. Stir the mixture a few times. By the time the crust is ready the mixture will be cool enough to put in the tin to bake. Put into a hot oven; bake quickly. This custard will be like jelly. A pie made like this does not need to bake as long as when cold milk is used. It is long baking and too many eggs that make custard pie tough and watery.

Cream Pie.—Mix thoroughly two cups of flour and five tablespoonfuls of butter, then add three tablespoonfuls of sugar and one large egg, which have been thoroughly beaten together previously. Roll an eighth of an inch thick, line two pie-tins, prick with a fork and bake a pale brown, then add:

The Cream: Two cups milk, two tablespoonfuls of corn-starch, five tablespoonfuls of sugar, yolks of five eggs. Cook together like custard, and when cold cover with meringue made of whites of five eggs and five tablespoonfuls powdered sugar.

Date Pie.—For one pie take one heaping cupful of pastry flour, add a pinch of salt and mix to the right consistency with sweet cream. The crust will be much nicer if allowed to get very cold before using.

Filling: To a cupful of seeded dates add a cupful of water, cook over hot water about twenty minutes, then rub through a sieve. Beat an egg and a tablespoonful of sugar until light; add a tablespoonful of lemon juice, the date paste and gradually a cupful of scalded milk. Pour into a half-baked shell and finish baking in a moderate oven until a knife blade can penetrate it and come out clean.

Pineapple Pie.—One-half can of pineapple, grated, two tablespoonfuls butter, one cup sweet cream, one-half cup sugar, yolks of three eggs. Bake with under-crust. Beat the whites of three eggs stiff with one-fourth cup sugar and brown in hot oven.

Butternut Pie.—Beat the yolks of three eggs with the white of one, and three tablespoonfuls of sugar; add scant half-teaspoonful of salt, a pint of milk and half a teacupful of chopped butternut meats. When baked frost the top with the whites of the eggs beaten stiff with two tablespoonfuls of sugar; flavor with lemon, set in the oven and brown with moderate heat.

Priscilla's Pumpkin Pie.—The Alden family has one ancient recipe for which extreme antiquity is claimed by such members of the

family as belong to the Mayflower Society. Some go as far as to declare it was the formula which enabled the fair Priscilla to charm Miles Standish and John Alden. It runs as follows: One pint pumpkin, one egg, one gill molasses, quarter pound muscovado, one piece of butter big as an egg, one gill of milk, salt, a little cinnamon, nutmeg and ginger (one teaspoonful of ginger, one-half teaspoonful of cinnamon, one-fourth teaspoonful of nutmeg, one-half teaspoonful of salt will be sufficient for one pie). Bake forty minutes. Double the quantity for two pies. This pumpkin custard baked in individual molds and served with whipped cream and bread and butter crusts would be much daintier than the pie.

Cream Peach Pie.—Peel, stone and halve ripe peaches. Line a deep pie-plate with puff-paste and lay the peaches in this. Sprinkle thickly with sugar and fit on an upper crust. Have ready and cold a cream sauce. To make this, scald a half pint of milk and thicken it with a tablespoonful of corn-starch rubbed smooth in a little cold milk. Add two tablespoonfuls of sugar and the frothed white of an egg. Boil together for five minutes and set aside to cool. When the pie is done carefully lift the top crust and fill the pie to overflowing with the cream sauce. Replace the crust and set in a cool place. Sprinkle with powdered sugar and eat very cold.

Mince Pie.—The following recipe for mincemeat makes nearly three quarts and is particularly fine: One cup chopped meat, one and one-half cups raisins, one and one-half cups currants, one and one-half cups brown sugar, one-third cup molasses, three cups chopped apples, one cup stock, two teaspoonfuls salt, two teaspoonfuls cinnamon, one-half teaspoonful nutmeg, one-fourth teaspoonful cloves, grated rind and juice of one lemon, one-fourth cup chopped citron, one-fourth cup brandy, one-fourth cup wine, the juice of two oranges and the grated rind of one orange. If one does not wish to use the brandy and wine one cup of cider and one cup of sirup from sweet pickles may be substituted.

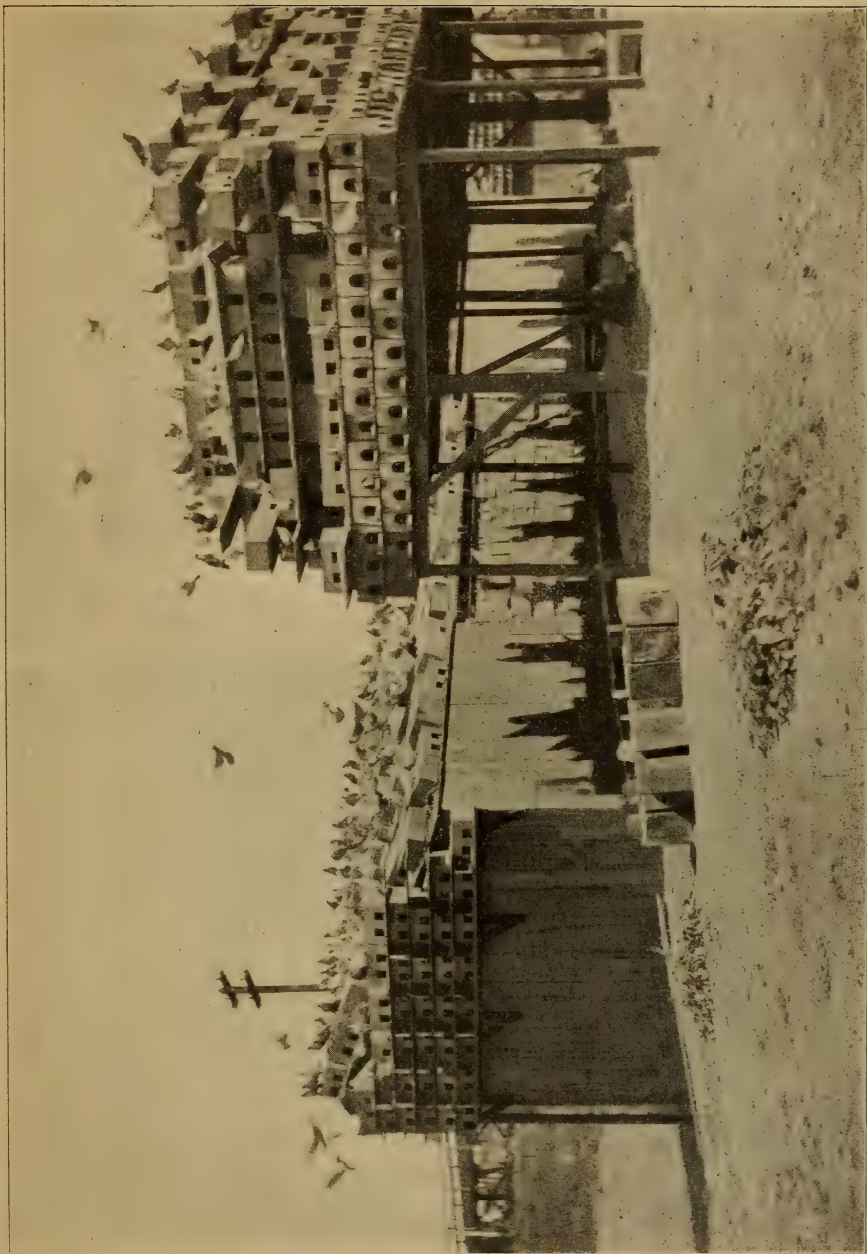
PUDDINGS AND DESSERTS

English Plum Pudding.—Seed first one pound of raisins; mix with them a pound of currants and half a pound of minced orange peel; dust over a quarter of a pound of brown sugar, half a nutmeg grated, three-quarters of a pound of stale, dry bread crumbs. Mix all the

ingredients together. Beat five eggs, without separating, until light; add to them half a pint of grape or orange juice; pour over the dry ingredients and mix thoroughly. The mixture should not be wet, but each particle should be moistened. Pack this into small greased kettles or molds. It will fill two three-pound kettles. Put on the covers, stand the molds in the steamer and steam steadily for ten hours. The easier way is to get the ingredients ready the night before; mix and put them on early in the morning allowing them to cook all day. Take them from the steamer, remove the lids of the kettles or molds and allow the puddings to cool; then replace the lids and put the puddings away. They will keep in a cool place for several months or a year.

Plum Pudding.—Six buttered crackers rolled fine and soaked in three pints of milk. Cream one-quarter of a cup of butter with one cup of sugar; add half a teaspoonful of salt, one teaspoonful of mixed spices and six well-beaten eggs. Stir it all into the milk and add one pound of the best raisins. Bake in a deep pudding-dish well greased with cold butter. Bake very slowly in a moderate oven three hours. Stir several times during the first hour to keep the raisins from settling.

Christmas Pudding.—Take three-fourths of a pound of suet chopped very fine. Mix with it while chopping a tablespoonful of flour, three-fourths of a pound of raisins seeded, three-fourths of a pound of sugar, three-fourths of a pound of currants, three-fourths of a pound of fresh bread crumbs, the grated surface of one lemon, one-fourth of a pound of candied orange peel and citron cut into thin shavings, one-half teaspoonful each of ground cinnamon, cloves, nutmeg and allspice. Mix the dry materials together thoroughly and then add six eggs, one at a time, and one-half cupful of brandy. Add another egg if too stiff and more bread crumbs if too soft. Wet a strong cloth in cold water, wring it dry, butter it and dredge it with flour. Turn the mixture into the center and draw the cloth together over the top, leaving room for the pudding to swell a little, and tie it firmly. Give it a good round shape. Put it into a pot of boiling water, having it completely covered with water. Cover the pot and boil for five hours. Do not let the water fall below the pudding, and in adding more let it be hot. After it is removed from the water let it rest in the bag ten minutes to harden a little. Then cut the string and turn



Courtesy of Breder's Gazette

PIGEON AND SQUAB RAISING.

Near many of the large cities in the United States there are extensive breeding grounds for pigeons. A portion of the stock is used in the propagation of fancy breeds, but most of the young pigeons, or squabs, are killed and dressed for the market. Hotels and restaurants then buy them and, when served on toast, few lovers of "quail" are the wiser.



United States Department of Agriculture

BUTTER MAKING—THE OLD WAY.



United States Department of Agriculture

BUTTER MAKING—THE NEW WAY.

it carefully into a dish. Pour a little brandy over the pudding and touch a match to it just before serving. Serve with a brandy or foamy sauce.

Plum Pudding Croquettes.—Heat a pint of milk, crumb into it a large cup of soft bread—no crust—cover it and let it keep hot for an hour. Add two tablespoonfuls of sugar, one egg well beaten, one-fourth teaspoonful of salt, the same of cinnamon, a little cloves and nutmeg, and a cup of chopped fruit, citron, raisins and currants. Mix well; when cold make tiny croquettes, dip them into beaten egg, roll in fine crumbs of cake or bread, fry till golden brown in smoking hot fat and serve with wine or vanilla sauce.

Tapioca Caramel.—Soak one cup of tapioca over night in one quart of water, in the morning add to it two cups brown sugar, bake until the tapioca is clear and jellylike. Remove from the oven and add to it one teaspoonful vanilla and the juice of half a lemon. Serve in ice cups with whipped cream heaped on the top.

Variety Fruit Pudding.—Sift one tablespoonful of baking-powder with one pint of flour, add one quart of milk, two-thirds cupful of sugar, one tablespoonful of melted butter, four eggs and fruit. This is usually baked in a buttered dish and served with sauce, according to the fruit used. As to the fruit you may use whatever you happen to have. Currants and raisins are nice, so are dried raspberries and strawberries, and both prunes and pieplant may be used. The pudding may be steamed instead of baked if desired. The fruit may be stirred into the batter or it may be spread between the layers of the batter; it all depends upon the kind of fruit used. Pare and quarter apples, place them in a basin, add sugar and nutmeg, pour in water enough to cover them, then spread the batter over the top. Cover the basin closely and set it on the back of the stove where it will cook slowly but steadily for an hour or more, and you will have a delicious pudding.

Cabinet Pudding.—Ornament the bottom of a well-buttered mould with citron and raisins. Cover them with slices of cake. Then fill the mold nearly full of alternate layers of fruit and cake, arranging the fruit on the edges of the fruit layers so it will be even. Make a custard mixture of a pint of milk, three egg yolks and three tablespoonfuls of sugar. Pour it slowly into the mold so the cake will be thoroughly soaked and set it in a pan of water. Bake it in a slow

oven for an hour or until the custard is set. Unmold the pudding and serve it with a wine sauce.

Frozen Cabinet Pudding.—Two dozen lady fingers, one cupful of English currants, one pint of cream, one pint of milk, one small tea-cupful of sugar, three eggs, three tablespoonfuls of wine. Put the milk in the double boiler, beat the eggs and sugar together and gradually pour the hot milk on them. Remove the boiler and cook two minutes, stirring all the time. Pour the hot custard on the lady fingers, add the currants and set away to cool. When cold add the wine and the cream whipped to a froth. Freeze the same as ice-cream. When frozen wet a melon mold with cold water and sprinkle a few currants on the sides and bottom, and pack with the frozen mixture. Pack the mold in salt and ice for an hour. When ready to serve turn out the pudding and pour over it some kind of a rich fruit sauce.

Cottage Pudding.—One cupful of flour, one heaping teaspoonful of baking-powder, one tablespoonful of butter, one-half cupful of sugar, one-half cupful of milk, a saltspoonful of salt and one egg. Mix the baking-powder with the flour and sift them. Rub the butter and sugar together to a cream and beat them into the egg. Then add the milk, in which the salt has been dissolved, add the flour, beat well together and turn into a cake tin which has a tube in the center. Bake about twenty minutes in a moderate oven. Turn it onto a flat dish, leaving it bottom side up. It can be served with a chocolate or cream sauce.

Swiss Pudding.—One teaspoonful of flour, one tablespoonful of butter, three of sugar, one pint of milk, five eggs, the rind of a lemon. Grate the rind of the lemon (the yellow part only) into the milk, which put into a double boiler; rub the flour and butter together, pour the boiling milk onto this and return to the boiler. Cook five minutes, stirring the first two; beat the yolks of the eggs and sugar together and stir into the boiling mixture; remove from the fire immediately; when cold add the whites of the eggs beaten to a stiff froth. Have a three-quarter mold well buttered; turn the mixture into this and steam forty minutes. Turn onto a hot dish and serve with a tumbler of currant jelly melted with the juice of two lemons.

Suet Pudding.—One cupful of molasses, one teaspoonful of soda, one cupful of milk, three and a half cupfuls of flour, one cupful of stoned raisins, one cupful of suet chopped fine, one teaspoonful of

salt. Mix the salt, flour and suet together; mix the molasses and the milk; add the soda and then as much of the flour mixture as will make a stiff batter, not a dough. Then add the raisins and flour and fill a covered pudding-mold half full; steam for three hours. Serve with wine or a foamy sauce.

Bread Pudding.—Two cupfuls of milk, one cupful of bread crumbs or broken bread, one tablespoonful of sugar, the yolks of two eggs, the white of one, one-half teaspoonful of vanilla, one saltspoonful of salt. Soak the bread in the milk until softened, then beat it until smooth and add the rest of the ingredients except the white of egg. Turn it into a pudding-dish, place this in a pan of hot water and bake in a slow oven fifteen or twenty minutes or only long enough to set the custard without its separating. Cover the top with a layer of jam or tart jelly and place in the center a ball of meringue made with the white of one egg. Dust with sugar, place in the oven a moment to brown the meringue, and then put a piece of jelly on the top of the meringue. Serve hot or cold, preferably hot. The jelly and meringue answer as a sauce.

Bread and Butter Pudding.—Cut stale bread into slices, remove the crust, dip them in melted butter and arrange them in a small round or square cake tin in even layers, alternating with layers of stoned raisins. When the mold is full pour over it a mixture made of one pint of milk, the yolks of two eggs and two tablespoonfuls of sugar; use only as much as the bread will absorb. Bake in a moderate oven twenty to thirty minutes. Turn it on a flat dish and serve with it a plain pudding sauce. The bread should be dry and crisp and hold the form of the mold.

Batter Pudding.—One cupful of milk, one heaping tablespoonful of butter, one-half cupful of flour, three eggs. Put the milk in a double boiler and when hot add the butter. Let the milk boil, then add the flour and beat it hard until it leaves the sides of the pan. Then remove from the fire and stir in gradually the eggs, which have been well-beaten (the yolks and whites together), and a dash of salt. Continue to beat the batter until it is no longer stringy. Turn into a warm greased pudding-dish and bake in a moderate oven about thirty-five minutes. It should puff up like a cream cake and have a thick crust. Serve as soon as it is taken from the oven or it will fall.

Batter and Fruit Pudding.—One pint of milk, one pint of flour, four

eggs, one tablespoonful of butter, one teaspoonful of salt, one pint of fruit pared and quartered (either apples or canned peaches are good). Beat the eggs well with a spoon, and add the milk to them. Turn part of this mixture on the flour and beat to a light, smooth batter. Add the remainder of the milk and egg and salt. Butter a pudding-dish and pour in the batter. Sprinkle in the fruit; bake half an hour. Serve with foaming sauce the moment it comes from the oven.

Fruit and Bread Pudding.—Soak one cup of stale bread crumbs in one pint of hot milk, add one tablespoonful of butter, one cup of sugar, one saltspoonful of salt and the same amount of spice. When cool add three eggs well beaten, two cupfuls of fruit, either chopped apples, raisins or currants, turn into a buttered mold and steam two hours. Serve with a hard sauce.

Brown Bread Pudding.—Mix together two pounds of brown bread crumbs, six ounces of sifted sugar, a little grated lemon peel, a pinch of cinnamon powder, four ounces of finely chopped glacé cherries and half a glass of curaçao. When thoroughly mixed add half a pint of milk or cream (if possible the latter), and the well beaten yolks of four eggs. Finally add the whites whisked to a firm froth; fill a well-greased mold and steam for an hour and a quarter. Turn out carefully; pour a little heated ginger sirup over and around, and serve at once. Strawberry or raspberry or pineapple sirup may be substituted for the ginger sirup if the latter is not liked.

Queen's Pudding.—Soak one pint of bread crumbs in one quart of milk, add two whole eggs and the yolk of one, reserving the white, one cup of sugar, two teaspoonfuls of lemon extract; bake. When cool spread with jelly of any kind (cranberry left from previous meal will do), cover with the reserved white of egg and the two left from the réchauffé beaten stiff, and sweetened with three tablespoonfuls of sugar. Brown lightly in the oven.

Sweet Potato Pudding.—Peel and slice the potatoes rather thin. Put a layer in a deep baking-dish, sprinkle lightly with sugar, salt, pepper and dot with butter. Continue to do this until the dish is filled. Cover with water and bake about thirty or forty minutes until tender.

Corn-meal Pudding from Johnny Cake.—A good way to make a corn-meal pudding is to bake a quantity of johnny cake the day before, spread so thinly in the baking-pans that when done it is not more than half an inch thick. Layers of this johnny cake are covered with

good meat gravy, allowed to stand over night and baked the next morning.

Pumpkin Indian Pudding.—Mix a pint of Indian meal and half a tablespoonful of ground ginger with a pint of cooked and mashed pumpkin. Stir a cupful of molasses and a third of a cupful of butter into a quart of boiling milk; add the pumpkin mixture, a level teaspoonful of salt and the grated yellow rind of a lemon. Before adding the molasses stir into it a half teaspoonful of soda dissolved in a little water. Turn into a buttered three-quart mold, cover tightly and boil three to four hours. Serve hot with lemon sauce.

Baked Indian Pudding.—One quart of scalded milk, with a teaspoonful of salt added, one and one-half cupfuls of Indian meal (yellow), one tablespoonful ginger, letting this stand twenty minutes, one cupful of molasses, two beaten eggs, a piece of butter the size of a common walnut. Bake two hours in a slow oven. Serve with caramel sauce.

RICE AS A DESSERT

Baked Rice for Quick Service.—Steam the rice the day before it is wanted until it is nearly done, then season it with sugar and cinnamon. Add seeded raisins and pour a thin cooked custard over it. Cover it closely and when baked quickly the next morning it tastes as if freshly prepared.

Imperial Rice.—Put into a double boiler a cup and a half of milk, one-half saltspoonful salt and one-fourth cup rice; cook, covered, till the milk is absorbed and rice tender, then add one-sixth box gelatin which has been soaked in sufficient cold water to cover, and dissolve over heat. Let the mixture cool and just before it begins to thicken add one-fourth cup powdered sugar, one-half teaspoonful vanilla and half a cup of cream whipped to a stiff froth. Turn into a wet mold and set away to cool.

Rice Cups.—Wash one cup of rice in several waters, place it in two quarts of boiling water and boil rapidly half an hour. Drain thoroughly and put into a double boiler with a pint of milk, and cook half an hour longer. It should be rather dry by this time. Garnish the bottom of custard cups with a slice of banana, some sort of preserves, and then pack the cup with the rice, allowing it to remain there for a few moments. Then turn out and serve with a soft boiled custard.

Lemon Rice Pudding.—Boil half a pint of rice in a quart of milk until very soft. Add to it while hot the yolks of two eggs, two tablespoonfuls of sugar, the grated rind of two lemons and a little salt; if too thick add a little cold milk; this should be a little thicker than a boiled custard. Turn into a pudding-dish, beat the whites of the eggs very stiff with eight tablespoonfuls of sugar and the juice of the two lemons, and brown the top delicately in the oven. Set on the ice until very cold.

APPLES

Apple and Tapioca Pudding.—One large cupful of tapioca, three pints of water, one cupful of sugar, one teaspoonful of salt, one teaspoonful of essence of lemon, three pints of pared and quartered apples. Wash the tapioca and soak it over night in three pints of cold water. Put the tapioca in a double boiler and cook until it looks clear. It will take from twenty to thirty minutes. When cooked enough add the sugar, salt and lemon and then the apples. Turn into a buttered dish and bake an hour and a quarter. Let it stand in a cool room half an hour before serving. Serve with sugar and cream.

Brown Betty.—Pare, core and slice sufficient apples to make a pint. Wash a half cup raisins, shell and blanch a half cup of almonds and cut in strips. Sift three-fourths of a pint of crumbs and mix with them a half teaspoonful grated nutmeg. Sprinkle over the apples one-fourth cup sugar. Butter a quart pudding-dish. Put apples, nuts, raisins and crumbs in alternate layers, having the last layer crumbs. If apples are dry, add one-half cup water. Dot the top with bits of butter and bake in a moderate oven one-half hour. Serve hot or cold with cream or sauce.

Apple Indian Pudding.—Stir half a cup of corn-meal into one pint of scalded milk. When thickened slightly stir in one pint of pared and sliced sweet apples, half a cup of molasses or sugar, half a teaspoonful of salt, a tablespoonful of butter and one quart of milk. Bake four hours very slowly in a buttered pudding-dish. To be eaten hot or cold with cream, whipped or plain.

Toronto Pudding.—Peel, core and chop fine four large tart apples. Beat three eggs, add four tablespoonfuls of sugar, the same of cleaned currants, one cupful of bread crumbs, half a cupful of flour,

the minced apples and the grated rind of half a lemon. Turn into a buttered mold and steam one and one-half hours.

Eve's Pudding.—Six eggs, six apples, six ounces of bread, six ounces of currants, half a teaspoonful of salt and a little nutmeg. Boil three hours and steam four. Serve with wine sauce.

Pan "Doudy."—To make pan "doudy" one must have apple sauce, or stewed rhubarb, and plenty of stale bread. The bread is cut into thick slices and toasted in a slow oven until crisp clear through. These slices are then buttered on both sides and placed in a pudding-dish, and the sauce, which must be very juicy, is poured over every layer. The sauce softens the bread, but does not make it like dough, and when it is baked and served hot it is delicious and very hearty.

Baked Apples.—When apples are to be baked they should be selected of equal size. They should be washed and polished, with the cores removed, and then be placed in a baking-pan a little distance apart, with a little water in the bottom of the pan. Bake in a moderate oven for about thirty minutes, basting frequently, so that they will not burn or blacken. Serve with sugar and cream. When apples are to be served for luncheon or dessert they should be pared and cored and the centers filled with butter and sugar. Let them bake in a pan with a little water until tender, but not so long that they will lose their shape. Baste frequently, letting them become only slightly colored. After removing them from the pan sprinkle them with granulated sugar. The space in the center may also be filled with jelly or jam with good results.

Apple Sauce.—Pare, core and quarter a half dozen apples. Make a sirup of one cup of sugar, two-thirds of a cup of water. When boiling add the apples and cook carefully two or three minutes, until they are tender, but not broken. Remove them carefully, boil the sirup down a little and strain it over the apples. They should be cooked in a granite or porcelain saucepan.

Apple Sauce.—Slice the apples after paring them, turn them into a granite basin, sprinkle sugar over them, add the juice of a lemon and a very little water, and let them bake in a slow oven until done, stirring them frequently so they may not become brown.

Date Apple Sauce.—When making plain apple sauce add dates stoned and cut in two. They give a delicious flavor and change an otherwise plain dish to a welcome dessert.

Scalloped Apples.—Pare and core four good-sized hard apples, cut them in slices, place a layer of bread crumbs in the bottom of a baking-dish, then a layer of apples, a sprinkling of chopped walnuts, a little sugar, then crumbs again and continue with alternate layers, having the top crumbs. Pour over the mixture a cup of water or sweet cider and bake forty minutes. Serve hot with cream and sugar.

Apple Shortcake.—Make a rich biscuit crust and bake it in a shallow pan. When it is done split it open, butter each piece and on one arrange a layer of apples cooked slowly in sirup until they are tender. Put on the other half bottom upward, and cover it with fruit. Serve with rich cream and shaved maple sugar.

Apple Pudding.—Peel and core eighteen sour apples and cut them in pieces; stew them slowly with a little water, a piece of cinnamon, two whole cloves and a bit of lemon peel until they are soft; sweeten to taste and mash them through a sieve. Incorporate the yolks of four eggs, the white of one, four tablespoonfuls of butter, some nutmeg and the juice and grated peel of a lemon; beat the mixture thoroughly and place it in a pudding-dish which has been lined with puff paste. Bake half an hour, then add a meringue and place it in the oven a moment to brown.

Bachelor's Pudding.—Pare, core and slice sufficient apples to weigh a quarter of a pound, add a quarter of a pound each of currants and grated bread, three ounces of butter cut in small pieces, or beef suet, a heaping tablespoonful of flour, two ounces of sugar, half a teaspoonful of salt, three beaten eggs, the grated rind and juice of half a lemon and quarter of a teaspoonful of nutmeg grated. Flour the fruit, mix the eggs and sugar together, and the suet and apples, then mix all and pour in a buttered mold. Steam three hours. Serve with any preferred sauce.

Apple Dumplings.—Make a short pie crust, roll it thin and cut into squares large enough to cover the apples. Select apples of the same size, pare them, remove the core and fill the space with sugar, butter, a little ground cinnamon and nutmeg. Place an apple in the center of each square of pie crust. Wet the edges with white of egg and fold together, the points meeting on the top. Give the edges a turn and flute; bake in a moderate oven about forty minutes, or until the apples are tender, but not until they have lost their form. Brush the top with egg, and ten minutes before removing from the oven dust

them with a little sugar to give them a glaze. Serve with a hard sauce.

Apples with Corn-starch.—Pare and core as many apples as will be used, having them a uniform size. To a quart of water add one-half cupful of sugar and the juice of half a lemon; boil the apples in this until tender, but remove them before they lose shape. Drain and place them in regular order upon the dish from which they are to be served. Boil the water down one-half, then stir into it one tablespoonful of corn-starch moistened in a little water, and let it cook until the starch is clear; remove from the fire, flavor with lemon or anything preferred, let it stiffen a little, then pour it over the apples. Sprinkle with sugar and place in the oven a moment to brown.

Apple Trifle.—Put together in a large stewpan one quart of chopped apples, one pound of sugar, a pinch of cinnamon, the juice of three lemons and the grated rind of one. Simmer slowly for an hour and turn into a serving-dish. When cold pour over a plain egg custard and use ice cold.

Apple Souffle.—Boil some peeled and cored apples until tender. Press them through a colander. Season to taste with butter, sugar and vanilla; place the purée in a granite-ware saucepan and let it cook until quite dry and firm. To one and one-quarter cupfuls of the hot, reduced apple purée add the whites of four eggs whipped very stiff and sweetened with two tablespoonfuls of powdered sugar. Mix the purée and meringue lightly and cook it together and turn it into a pudding-dish. Smooth the top into a mound shape, sprinkle with sugar and bake in a slow oven twenty or twenty-five minutes. Serve with a hard sauce. This souffle does not fall.

Apples and Honey.—Remove the cores and skins from apples and place them in a baking-pan. Put into each apple a teaspoonful of honey and a lump of butter, with a slight sprinkling of cinnamon. Pour a cupful of water on the baking-pan and bake until brown and tender.

Apples and Lemon.—Take six large, spicy apples, quarter them, and cover with one pint of cold water and half a pound of granulated sugar. Skim well while boiling and add an even saltspoonful of ground cinnamon and the juice of half an orange or lemon. Stir, but do not break the apples. Serve when ice cold.

Apple Omelet.—To six stewed apples add two tablespoonfuls of

butter, two of sugar and three well beaten eggs. Fry as an omelet and sprinkle with sugar. Serve very hot.

Apple Conserve.—Boil together one cupful of water and a pound of granulated sugar. Boil until it spins a thread. Remove the skin and core from well-flavored apples, and when the sirup is sufficiently boiled drop the apples in gently and boil slowly until they are done. Remove the apples to a glass dish and boil the sirup until it will jelly. When partly cool pour the sirup over the apples and stand away in a cold place. These are very nice for luncheon or for a Sunday night supper.

Novel Suggestions for Cooking Apples.—In caring for apples they should first of all be sorted. Pare the best parts of the imperfect ones. If a perfect quarter is obtained place it in a dish for future sweet pickles. The smaller pieces can be either stewed or canned, or they can be made into apple butter, or combined with the juices of other fruits and made into marmalade.

The same recipe may be used for making these apples into sweet pickles as is used when making crab-apple sweet pickles, and if the pieces are carefully dropped into the liquid while it is boiling hot, and but few put in at a time, they will not break up badly. They may be used just as any other fruit for pickles, sauce or pies as the occasion demands.

Juice left from the canned fruit eaten may be mixed with the portion of sliced apples left for marmalade. This makes a very nice change and comes in good in the spring when the other fruit is nearly gone.

A little lemon juice or oranges stewed with a part of the canned apple-sauce gives it a fine flavor and a change. Some may be seasoned for pies by stewing down until quite thick, and this should be kept for pies or rolled steamed puddings. By being careful so many of the apples will not go to waste.

Canned Fried Apples.—Fry the apples, and fill the cans as they stand in the boiler of hot water, then partially screw on the cover and allow them to remain where they are until the water is boiling vigorously. Then treat them like any other canned fruit.

CIDER SUGGESTIONS

Cider Will Keep if It Is Boiled, reduced at least one-third and then bottled. A raisin or a few mustard seeds may be put in the bottle

previous to pouring in the cider. The corks must be fastened with wires, and the bottles be placed in a dark, cool closet.

Spiced Apples with Cider.—Boil together one cupful of cider, one-quarter cup of vinegar, one cupful brown sugar, one bay leaf, two teaspoonfuls whole allspice, two dozen whole cloves, two inches stick cinnamon, two blades mace. Pare and core eight large, tart apples, cut in quarters and add to the boiling sirup; simmer gently until tender, but not broken. Take out the fruit carefully, boil sirup until thick as honey, pour over apples and serve cold. These are delicious with roast goose, duck or pork or any cold meat.

Cider Pudding.—Cream one and a half tablespoonfuls butter, add three tablespoonfuls granulated sugar and one egg. Beat all together until very light. Add half a cup of cider. Into one cup flour put one-half teaspoonful cinnamon, one-quarter teaspoonful grated nutmeg and one-eighth teaspoonful of ground cloves. Sift this into the batter and add a quarter cupful each of currants and sultana raisins mixed with a quarter cup of flour. Add one-quarter teaspoonful of baking-soda with the last bit of flour and beat briskly for a minute or two. Pour into a well-greased mold and steam one hour and a half; turn out carefully, as the texture is delicate, and serve hot with orange sauce.

PEACHES

Preserved Peaches.—Remove the skins by placing them in an iron basket and plunging them for a moment into boiling lye. This is a better method than paring, as the fruit is less apt to be injured. The lye is made of two cupfuls of wood ashes to four quarts of water. After removing the fruit from the lye rinse thoroughly in cold water and then rub off the skins. Cut each peach in two and place again in cold water to preserve the color. Place in a porcelain-lined kettle three-quarters the weight of sugar you have of fruit. Add a very little water to dissolve the sugar. Let it boil a minute and take off any scum that rises. Then add as much fruit as will float without crowding, and cook until it is transparent, but not until it loses shape. Remove each piece separately as soon as it is cooked. When ready to fill the jars, place them carefully in a pan of boiling water; have the tops and rubbers also in hot water. Place the fruit in the jars and pour the hot sirup over it.

Glazed Peach Pudding.—Boil and drain one cup of rice. Boil together until they spin a thread, a half pound of sugar and a gill of water; have ready pared and stoned six nice fresh or canned peaches. Put the rice in the center of a round dish; make it perfectly smooth, round and flat to the depth of about two inches; have a large dish of cocoanut. Lift the sirup from the fire; dip in carefully each piece of peach; arrange it at once on the rice, filling the center full of cocoanut, and so continue until you have the peaches in a mound. Agitate the sirup left in the pan for a moment and then stir it full of cocoanut. Make into tiny balls; drop the mixture here and there and send it at once to the table. To be eaten plain or with cream.

Peach Pudding.—Drain the liquor from canned peaches and thicken slightly with cerealine or corn-starch; add the beaten yolks of two eggs, two-thirds teacupful of sugar, a little salt and a tablespoonful of butter. Put the mixture into a well-buttered pudding-dish, drop the peaches over the top and bake half an hour. Cover with a meringue.

Peach Pudding.—Line the bottom of a deep pudding-dish with thick slices of stale sponge cake soaked in sherry. Fill the dish with fresh peaches sliced and sprinkled with sugar. Spread over the top a meringue of whites of eggs beaten lightly with sugar in the proportion of a tablespoonful of sugar to one egg and return it to the oven just long enough to lightly brown the meringue. Set the dish on ice and serve very cold with plain whipped cream.

Peach Pudding.—One cupful of sugar, one of milk, three of flour, two eggs, one-half cupful of butter, two teaspoonfuls baking-powder. This should be spread over a broad, shallow pan. On top of this batter place peaches halved, peeled and seeded. In the hollows put sugar, a bit of butter and a drop of vanilla; bake and eat warm with milk.

Peach Tapioca.—Soak half a pint of granulated tapioca in a quart of cold water for half an hour, then add a pint of boiling water, cook slowly until perfectly transparent. Peel and quarter six large peaches or eight small ones, sprinkle with half a cup of sugar, put in an earthen baking-dish, pour the tapioca over, sprinkle with two tablespoonfuls sugar, and bake slowly half an hour. Eat either hot or cold with whipped cream.

Compôte of Peaches.—Pare the fruit and remove the pits. Put it in a shallow earthen dish with enough water to fill the dish a quarter

inch deep. Place in a moderate oven and bake until tender. Serve hot with hard sauce.

Peach Scallop.—Peel and chop enough peaches to make two cupfuls. Put a layer of them in the bottom of a greased pudding-dish, sprinkle thickly with sugar, add a layer of stale sponge cake crumbs, then more sugared peaches and so on until the dish is full. Sprinkle with sugar and crumbs and bake for three-quarters of an hour. Eat hot with a hard sauce.

Peach Snow.—One cup of sweet cream, one cup of sugar, one quart of sliced peaches, whites of two eggs. Add half the sugar to the cream and stir until it is dissolved, then add the stiffly beaten whites. Place the sliced peaches in a dish, sprinkle with the remainder of the sugar, pour the cream over and serve at once. The cream, eggs and fruit should be kept on ice for at least two hours before the dessert is prepared.

Peach Bavarian Cream.—One quart of cut-up peaches, one large cupful of sugar, one pint of cream, half a box of gelatin, half a cupful of cold water. Mash the peaches and rub them and the juice through a sieve. Add the sugar. Soak the gelatin two hours in the cold water. Whip the cream to a froth. Put the peaches in a saucepan and let them simmer twenty minutes. Stir often. Add the gelatin to the hot peaches and remove at once from the fire. Place the saucepan in a pan of ice water and beat until the mixture begins to thicken; then stir in the cream. Mix thoroughly and pour into the mold. Set away to harden. Serve with whipped cream.

Peach Ice-cream.—Sweeten a quart of rich cream, flavor it with a dash of vanilla, put the cream in a freezer and when it is so chilled that it begins to stiffen stir in a quart of peaches that have been peeled and chopped fine and sweetened. Then freeze as you would any ice-cream.

Peach Souffle.—Remove the stones from ripe, juicy peaches and press the pulp through a sieve. To the pulp add a half pound of pulverized sugar and the beaten whites of three eggs. Whip the mixture until very light; then fold in the whites of four more eggs beaten stiff, and let it stand in a quick oven for five minutes. Serve at once. Preserved or canned peaches may be used in the same manner.

Pickled Peaches.—Select ripe, sound fruit, and rub each peach

thoroughly with a flannel to remove all the fuzz, or the fruit can be dropped in the lye as for preserved peaches. The skin, however, adds flavor to the peach, and it also keeps the fruit from becoming tough. In each peach stick two cloves and several small pieces of cinnamon. For six pounds of fruit use three of sugar and a pint of vinegar. If the vinegar is too strong add water to it that has been boiled and allowed to become cold. Have the sirup very hot and drop the fruit in it and allow it to cook until tender.

Peach Shortcake.—Four cupfuls of sifted flour, three teaspoonfuls of salt, one teaspoonful of butter, one teaspoonful of lard, milk. Sift the baking-powder and salt and flour, rub in the shortening; then with a fork stir in lightly and quickly sufficient milk to make a soft dough—too soft to roll. Turn the mixture into two greased pie-tins and bake in a hot oven about thirty minutes. Cut up the peaches and let them stand while the cake is being prepared and baked, adding enough sugar to sweeten. Butter the baked crusts and place the peaches between them, reserving enough to cover the top. This can be served plain or with whipped cream.

Peach Fritters.—One quart of flour, two heaping teaspoonfuls of baking-powder, one-half teaspoonful of salt, three eggs. Pare, slice and halve the peaches, dip in the batter and fry in hot fat, serving immediately with hard sauce or sugar and cinnamon.

Peach Kisses.—Pare and halve six large, ripe peaches. Boil one pint of granulated sugar with a quarter pint of water until it snaps when dropped in cold water. Dip the peaches in this and set away to harden. Whip the whites of four eggs until the bowl may be inverted without dropping them. Beat in five tablespoonfuls powdered sugar and two tablespoonfuls blanched and finely chopped almonds. Drop this in large spoonfuls into a pan of boiling water and cook for a minute or two, then lift out carefully to a large plate. Fill each peach half with this mixture, rounding the tops slightly, and keep in cool place until ready to serve.

PEARS

Pear Pudding.—Pare, core and cook until transparent six pears, either Bartlett or a good cooking pear, adding to the sirup one tablespoonful of lemon juice, one teaspoonful of preserved ginger root. Have ready the following: Pour one cup of boiling water onto two

tablespoonfuls of corn-starch moistened with a little cold water, cook until transparent, then add two tablespoonfuls of sugar, and fold in stiffly beaten whites of three eggs. Line a mold with this. Cut the stewed pears into thin slices and lay in the center of the mold; cover with more of the pudding and set on ice until firm. Serve with a sauce made by adding one cup of cream to the sirup, which should measure one cup; when hot add two egg yolks beaten until foamy. Serve ice cold.

Baked Pear Pudding.—Boil one-half cup of rice in salted water until tender, then drain and put into a double boiler with one cup of milk. Cook until the latter is absorbed, then add one cup of sugar, one tablespoonful of butter and turn lightly through with a fork until the sugar is dissolved. Butter a fancy mold and have ready three cups of the prepared pears, which have been pared, cored and cut into tiny bits. Fill the mold with alternate layers of rice and pears, finish with a layer of rice. Bake for twenty-five minutes in a quick oven. Turn out on a dish and serve with whipped cream.

Baked Pears.—Core, do not pare, five large soft pears. Insert a date that has been freed from its stone in the vacant space and bake the pears until tender, basting them with melted butter, sugar and hot water. Make a meringue of the beaten white of one egg and one tablespoonful of powdered sugar. Drop a teaspoonful of this on top of each pear and brown in a slow oven. Serve the pears either hot or cold.

Compôte of Pears.—To a half pint of water and half a pound of sugar add the juice of half a lemon and one-fourth cup of raspberry juice from canned fruit. Let it boil ten minutes and then add as many of the best table pears peeled and cut in halves as the sirup will cover. Let them simmer until perfectly tender yet unbroken, then lift carefully to a glass dish, spread over them a thin layer of apple jelly, and, after the sirup has been reduced by boiling until rich and thick, let it cool a little and then pour over the fruit. Cream may be served with it if liked.

Ginger Pears.—Five pounds of pears chopped fine, four pounds granulated sugar, four lemons (grated rind of two, juice of four), two ounces of ginger preserves or ginger glacé chopped very fine. Boil until thick as jelly and put up in cups.

Ginger Pears.—Peel and core the pears and cook until tender in just

enough water to cover them; then take them out and put in the water your sugar and ginger, using three-quarters of a pound of sugar to every pound of fruit, and two ounces of ginger to every five pounds; boil the sirup about half an hour and then put in the pears and boil them about ten minutes. Put in glass cans and seal.

VARIOUS FRUITS

Baked Quinces.—Pare and core one dozen nice quinces, fill the cavities with granulated sugar, place in shallow pan with little water, bake slowly until tender, basting often; in the meantime make a jelly with the cores and parings, allowing, when strained, a pint of sugar to one of juice; pour jelly while hot over the quinces, which have been put in glass dish. When cooled set on ice. Serve with whipped cream or not, as you fancy.

Pineapple Pudding.—Grate a pineapple very fine and mix well together a cupful of sugar and four eggs. Then mix them with the pineapple pulp. Turn the mixture into a mold, set the mold into a pan of water and bake it slowly until stiffened like a baked custard. When cold unmold and decorate with whipped cream.

Iced Pineapple.—Chop one pineapple (or one can of sliced pineapple if the fresh fruit cannot be obtained) quite fine and cover with sugar. Set in the refrigerator until thoroughly chilled. Just before serving add the juice of one lemon and one-fourth of a cup of strawberry or other fruit juice. Cover with finely cracked ice.

Apricots with Cherries.—One quart of stewed evaporated apricots rubbed through a colander and sweetened with one pint of sugar; add one pint of preserved cherries, the juice of one lemon, and pack in freezer. When it begins to harden stir in one pint of cream, whipped stiff, measured before whipping.

FRUIT TRIFLES

Plum Trifle.—Cut damson plums in halves and cook until tender in a little sirup, drain and rub the pulp through a coarse sieve. To a cupful of the pulp when cold add the stiffly whipped whites of four eggs. Fill glass custard cups half full of vanilla custard and when very cold put a large spoonful of the trifle on top, heaping it up roughly. Serve very cold.

Lemon Trifle.—Take one large sponge cake, slice it and arrange it

in a deep glass dish, then pour a teacupful of hot milk over it to soak it. Beat the yolks of three eggs and stir with them four tablespoonfuls of powdered sugar. Heat three teacupfuls of milk and pour over the eggs by degrees, stirring constantly, then return to the saucepan and continue stirring until it thickens. Let it cool a little, then add three teaspoonfuls of lemon extract and pour over the cake. When perfectly cool cover with the whites of the eggs beaten to a stiff froth, sweetened with one tablespoonful of sugar and flavored with the extract of lemon and a quarter of a lemon rind finely grated. The trifle should be made only long enough before serving to allow it to cool and the frosting to be added.

Trifles.—Beat one egg, add to it one tablespoonful of sugar and work in enough flour to make a stiff dough. Roll it as thin as a dollar and cut into small round or square cakes. Drop into boiling lard and cook a light brown. Take them out with a skimmer and drain on brown paper. When ready to serve put a spoonful of jelly on each.

Lemon Sherbet.—For a lemon sherbet boil together for twenty minutes one pint of sugar and one scant quart of water and when cool add a cupful of lemon juice and the grated rind of two lemons; mix together and freeze until firm. Strawberry and orange sherbets are made in the same way, adding a little lemon juice. A mixture of fruit juices makes delicious sherbets or sorbets; the latter are sherbets only half frozen.

CREAMS AND CUSTARDS

The success of whipped cream depends upon the fact that the dish, the beater and the cream are thoroughly chilled in advance. Lovers of whipped cream will rejoice in the fact that this delicious froth is more easily digested than is plain cream. So let there be whipped cream for the strawberries and the chocolate and the puddings. Whipped cream will cover, sometimes, a multitude of sins. Strawberries which are small and in appearance somewhat inferior can be served advantageously in a large bowl with an abundance of sweetened whipped cream upon them.

Custard Pudding—How to Cook It.—In cooking custard pudding the liability of the eggs and milk to separate is greatly lessened if not entirely removed by baking in cups set in water. Ordinary stone-

ware cups will answer every purpose, though the cups with straight sides, like a tumbler, make rather prettier forms. Grease the cup with butter and sprinkle on all the granulated sugar which will adhere to the butter before filling with the pudding or custard.

Magic Custrad.—Cut and butter on both sides half a dozen thin slices of bread; cut into quarters and cover with one quart of custard flavored with vanilla. Bake, and when cooked have the whites made into a meringue and put on top; return to oven to brown. Serve cold.

Custard Cups.—Beat the yolks of five eggs till light; add a generous half cup of very light brown sugar, or granulated may be used, three and one-half cupfuls of milk, one teaspoonful of vanilla and one-fourth teaspoonful of salt. Stir until the sugar is dissolved. Pour the custard into cups; grate a little nutmeg over each; stand in a pan of warm water and bake in a moderate oven till just set, that is, till a knife plunged into the center will come out clear—a moment longer will turn them watery. Set aside to cool.

Macaroni Custard.—Put three cups of milk into a saucepan with the rind of half a lemon and three tablespoonfuls of sugar, bring to the boiling point, and drop into it one-fourth of a pound of macaroni; let it gradually swell over a gentle fire, adding a saltspoonful of salt when half cooked. When tender but unbroken turn into a deep dish and pour over the hot macaroni three cups of hot boiled custard; grate over it a little nutmeg; when cold garnish with slices of candied citron.

Coffee Bavarian Cream.—One-half ounce of gelatin, one-quarter cupful of cold water, one-half cupful of hot water, one cupful of coffee, one-half cupful of sugar, one cupful of whipped cream. Soak the gelatin in the cold water for an hour. Then dissolve it in the hot water and add the sugar. When the sugar is dissolved add a cupful of cold, strong, clear coffee. Put the mixture on ice and whip until it becomes light and frothy and has begun to stiffen. Then add the whipped cream and turn it into a mold. The gelatin must be thoroughly whipped and the liquid drained from the whipped cream must not go in. This will make a little over a quart of mousse.

Leche Dulce, or Sweet Milk, is a Cuban dessert which is suited to the farm supper; it is sure to be a favorite with the children. It is prepared by putting on a quart of milk to boil, sweetened with a cupful

of molasses or sugar; add two tablespoonfuls of lemon juice to make it curdle. It does so in large pieces; then sprinkle with a teaspoonful of ground cinnamon. When eating it, and cutting through these pieces with the spoon, it resembles a piece of cake in sauce.

EMERGENCY DESSERTS

Fruit Sandwiches.—Cut in nice even slices one-third inch thick one-half a loaf of stale, spongy bread, cut off the crusts and butter the slices. Pile them one upon the other with peaches or any preserve spread between. Pour over the whole sirup from the fruit and let it stand half an hour before serving. Serve with cream. Very good.

Bread Tarts.—Cut bread into slices a quarter of an inch thick, then with a biscuit cutter about three inches in diameter stamp it into circles. Moisten the circles of bread with milk, but do not use enough to cause them to fall apart; then spread them with any jam or preserve and place together like a sandwich; place them in a frying-pan with a little butter and sauté them on both sides to a delicate brown; sprinkle with powdered sugar and serve very hot. A foaming sauce can be served with them if desired, but it is not essential.

SOUFFLES

Vanilla Souffle.—One cupful of milk, two teaspoonfuls of flour, three tablespoonfuls of sugar, two tablespoonfuls of butter, one-fourth teaspoonful of salt, one teaspoonful of vanilla, four eggs. Put the milk into a double boiler with the salt; when it is scalded add the butter and flour, which have been rubbed together. Stir for ten minutes to cook the flour and form a smooth paste; then turn it onto the yolks of the eggs, which with the sugar added have been beaten to a cream. Mix thoroughly, flavor and set away to cool; rub a little butter over the top so that no crust will form. Just before time to serve fold into it lightly the whites of the eggs, which have been beaten to a stiff froth. Turn it into a buttered pudding-dish and bake in a moderate oven for thirty or forty minutes; or put the mixture into buttered paper cases, filling them one-half full, and bake ten to fifteen minutes. Serve with the following sauce: One-half cup of butter, one cupful of powdered sugar, one teaspoonful of vanilla, one-fourth cupful boiling water, two tablespoonfuls of sherry,

white of one egg. Cream the butter and sugar; add the vanilla and wine and beat them well. Just before serving stir in the boiling water; add the whipped white of egg and beat until foamy. Serve at once after taking from the oven.

Chocolate Souffle.—Two cupfuls of milk, one and one-half squares of chocolate, three-fourths of a cupful of powdered sugar, two tablespoonfuls of corn-starch, three eggs, one-fourth teaspoonful of salt, half a teaspoonful of vanilla extract. Boil the milk in a double boiler, leaving one-third of a cupful to mix with the corn-starch. After mixing stir into the boiling milk and cook eight minutes. Dissolve the chocolate with one-half cupful of the sugar and two tablespoonfuls of boiling water. Add to the other mixture. Beat the yolks and add them and the salt. Cook two minutes. Set in cold water and beat until cool, then add the flavor and pour into a dish. Beat the whites of the eggs to a stiff froth, add the remaining sugar and pour on the custard. Dredge with sugar, brown in the oven, but let it remain there but a few seconds.

CHOCOLATE DESSERTS

Iced Chocolate.—To one pound of grated chocolate add a cup of hot milk and stir until smooth. Now add one quart of boiling milk (less one cup) and boil six minutes, stirring constantly. Pour in a pitcher and set on ice till very cold. Have tall thin glasses and half fill with crushed ice; add two or three lumps of sugar and fill with the iced chocolate. Put on top a generous spoonful whipped cream. A good drink for hot weather.

Chocolate Cream.—Scald two cupfuls of milk and melt on a dry pan two squares of unsweetened chocolate; add the hot milk slowly to the chocolate, stirring all the time. Let it come to the boiling point. Beat two whole eggs and two yolks with four tablespoonfuls of sugar; stir the milk and chocolate into the eggs and half a teaspoonful of vanilla and a dash of salt; turn the mixture into a mold; set it into a pan of hot water and cook in a slow oven until it is firm. In order to have it smooth and solid it must bake slowly. Test it by running in the point of a knife; if it is not cooked it will coat the knife with milk. Unmold and serve cold with whipped cream.

Creole Chocolate Pudding.—To one-half pint of dried and rolled bread crumbs add one quart of milk, one-half cup of sugar, yolks of

three eggs beaten, pinch of salt, one-half teaspoonful vanilla, one-third cake Baker's chocolate grated. Bake until set well and serve with whipped cream on top or whites of eggs in meringue.

Steamed Chocolate Pudding.—One-half cup granulated sugar, one egg, one tablespoonful of melted butter, a pinch of salt, one-half cup milk, two cups flour, one teaspoonful baking-powder, one-half teaspoonful vanilla, two squares of grated chocolate. Steam one hour. Serve with whipped cream.

PUFFS

German Puffs.—The yolks of six eggs, five tablespoonfuls of flour, one of melted butter, one pint of milk, one-half teaspoonful of salt. Beat the yolks of the eggs light, add the milk to them and pour part of this mixture on the flour. Beat light and smooth. Then add the remainder of the eggs and milk and the salt and butter. Butter muffin-pans and half fill them with the batter. The quantity given will fill twelve puffs. Bake twenty minutes in a quick oven. Serve on a hot platter with sauce poured over them, making the sauce of the whites of six eggs, one cupful of powdered sugar, the juice of two oranges or one lemon. After beating the whites to a stiff froth gradually beat in the sugar and then the juice of the fruit.

Delicate White Puffs.—Beat a pint of rich milk and the whites of four eggs until very light, and add slowly, beating all the while, a cupful of finely sifted flour and a scant cupful of powdered sugar and the grated peel of half a lemon. Bake in buttered tins in a very hot oven, turn out, sift powdered sugar over them and serve hot with lemon sauce.

NUT DESSERTS

Peanut Wafers.—Chop fine one pint of shelled and skinned peanuts, add three eggs, two tablespoonfuls of milk, some salt and one cup of sugar creamed with two tablespoonfuls of butter. Then add flour to make a soft dough, roll thin, cut into strips and bake in a moderate oven.

Foamy Peanut Sauce.—Soak one-quarter ounce of gelatin in quarter cup of cold water for fifteen minutes, dissolve over hot water, and add to one-quarter cup of cream, stirred with four teaspoonfuls of

peanut butter until smooth. Add this mixture to one cupful of double cream whipped, adding also half a cupful of chopped peanuts, one-half teaspoonful of salt and a saltspoonful of white pepper. Beat all together over ice until stiff enough to stand alone.

Almond Dainties.—Make a boiled frosting with one cup of sugar and the white of an egg. Stir into this a cupful of slightly chopped blanched almonds and a half cup of currants. Spread quickly on small unsweetened crackers and run into the oven to brown slightly. Delicious with afternoon tea.

Almond Pudding.—One pint of shelled almonds, two dozen macaroons, the grated rind of a lemon, half a cupful of sugar, half a cupful of butter, the yolks of six eggs, one quart of milk, one pint of cream, one tablespoonful of rice flour. Blanch the almonds and pound them in a mortar; put the milk in a double boiler, reserving half a cupful; add the pounded almonds to it. Mix the rice flour with the half cupful of cold milk and stir into the boiling milk; cook six minutes and put away to cool; when about half cooled add the sugar and butter, which should have been beaten together until light. When cold add the yolks of the eggs well beaten, the macaroons, which have been dried and rolled fine, and the cream. Butter a pudding-dish that will hold a little more than two quarts. Turn the mixture into this and bake slowly for forty-five minutes. Serve cold.

Chestnut Ice-cream.—Make a boiled custard of one pint of hot cream, six beaten eggs and one-half a cupful of sugar and a pinch of salt. Then add one pound of French chestnuts that have been boiled tender, shelled and pressed through a sieve. Flavor delicately with vanilla and freeze. Serve in fancy cups with a boiled chestnut garnish.

Chestnut Puree.—Boil for five minutes a pound of French chestnuts; drain off the water and remove the shells and skins; return the chestnuts to the fire and boil them until tender; put the boiled chestnuts in a mortar and pound them to a paste, then add a teaspoonful of vanilla and a teaspoonful of lemon juice; make a thick sugar sirup and beat it into a paste, using enough water to sweeten to taste. Grease a ring-mold with oil and put into it a lining half an inch thick of the chestnut paste pressed through a pastry bag with a tube of small opening so it will come out in form like vermicelli; fill the rest of the mold with plain paste; turn it onto a layer of sponge cake

Just before serving fill the center of the ring with whipped cream flavored with either wine or essence.

Chestnut Bavarian Cream.—The chestnuts are prepared as for chestnut purée. To two cupfuls of purée add one ounce of gelatin, which has been soaked for an hour and a half in half a cupful of cold water and then dissolved in a half cupful of hot water. Mix well and when it begins to stiffen add a pint of cream whipped to a stiff froth and turn the mixture into a ring-mold to harden. Fill the center with whipped cream.

ORANGE DESSERTS

Orange Macaroon Pudding.—Soak one-quarter pound of almond macaroons in a pint of milk until soft. Beat four eggs without separating with one-half cupful of sugar and the grated rind of an orange. Do not grate a bit of the white, as it spoils the flavor. Stir carefully into the macaroons and sugar. Add juice of two oranges. Pour into a buttered mold and set on a stand or ring in a kettle of boiling water. Keep boiling steadily for an hour; add only boiling water to keep covered. Serve hot with orange sauce. Be sure the lid fits tight to keep water from soaking in.

Orange Tapioca.—Soak over night one-half cup tapioca with about three pints of water. In the morning add one cup of sugar and one saltspoonful of salt. Boil until clear. Beat the whites of two eggs very stiff. Remove tapioca from stove and beat in the eggs; lastly, beat in one cup of shredded oranges. This will make enough for two desserts. Any preferred fruit may be used.

PRUNES

Rice and Prunes can be happily combined in a dessert. Spread stewed prunes over the bottom of the mold, then fill the mold with boiled rice. Press the rice in just hard enough to make it hold in shape. Turn it out of the mold and serve cold with the sweetened juice of the prunes as sauce, or it may be served with whipped cream.

Prune Souffle.—Wash half a pound of prunes in warm water; put them to soak for six hours in cold water to cover. Then stew in the same water until tender. Drain, remove the stones, sweeten to taste and beat to a smooth paste. Whip the whites of four eggs until stiff and add the prune paste. Turn into a buttered mold or baking-dish,

and bake for twenty minutes. The soufflé can be served hot or cold with whipped cream.

BANANAS

Banana Cream.—One cupful of milk, one cupful of water, one heaping teaspoonful of corn-starch, one even teaspoonful of sugar, one-half saltspoonful of salt, two bananas, six lady-fingers, one-half pint of cream. Slice the bananas and place them in a glass dish in alternate layers, with four lady-fingers split in two. Put the milk and water in a saucepan; add the sugar, salt and corn-starch diluted in a little cold water. When it has thickened pour it over the bananas and let it stand until cold and ready to serve; then cover the top with whipped cream. Split and break in two the remaining lady-fingers and place them upright around the edge.

Banana Soufflé.—Slice a sufficient number of bananas in a buttered ramequin; sweeten to taste and flavor with lemon juice. Prepare a custard of one quart of rich milk, the yolks of four eggs and half a cupful of sugar. Pour while hot over the bananas. Cover with meringue and brown in a slow oven. Serve cold.

Bananas and Cream.—Cut bananas into slices one-quarter of an inch thick. Arrange them in a pile in the center of the dish and place around them spoonfuls of whipped cream. The cream may be flavored with sherry or vanilla, but no sugar should be used.

Steamed Banana Pudding.—One cup of molasses, one-half cup of butter, one teaspoonful of salt, one teaspoonful each of cinnamon and grated nutmeg, two eggs, three cups of whole wheat flour, one cup of milk, one level teaspoonful of soda, one cup of seeded raisins, three yellow bananas. Soften the butter and add the molasses, then stir in the well beaten eggs, the flour, milk, salt and spices. Dissolve soda in a tablespoonful of lukewarm water and add; now stir in the raisins and the bananas cut very thin. Butter a pudding-mold, fill two-thirds full, put on cover and set in kettle of boiling water, weighting down, to boil continuously for three hours.

Baked Bananas with Cream.—Bake the bananas fifteen minutes, or until they are soft, but take them up before the skins break. Split them, remove them from the skins and curl them doughnut shape on plates. Put a teaspoonful of raspberry jam in the center of each and serve with cream. Delicious.

Boiled Bananas.—Wash a dozen medium-sized bananas and boil with their skins on in soup stock to cover for half an hour. Remove, then take off a strip of skin, leaving the pulp in a boat; place around the edge of the meat platter and serve hot with the roast. This is a Cuban style of serving this fruit.

Banana Boats.—Select small, firm bananas, or cut large ones in half crosswise. They may be either fried or baked. If baked, remove the skins, place in a buttered tin, sugar lightly, using a level teaspoonful only to six pieces, and sprinkle on each a few drops of lemon juice. Bake twenty minutes in a quick oven. Cut five or more slices of bread, not quite one-half inch thick, from a fairly fresh loaf. The slices may be cut thicker if necessary to handle well, and they should be as nearly square as possible, but the crust should not be trimmed off to make them so. Butter evenly and on each place diagonally a whole or half a banana, as the case may be; bring the opposite corners of the slice carefully together over it, joining with slender skewers or toothpicks, and fastening the projecting ends together with a piece of twine. Place on buttered tin and brown delicately in a quick oven. Remove the fastening and serve with or without a dressing. A well seasoned cheese or tomato sauce may be used, or a sweet sauce, as chocolate, or a nicely made one of fruit.

Banana Sponge.—Whites of four eggs, six bananas, one and a quarter cupfuls of sugar, three-quarters of an ounce of gelatin, the juice of one orange and the juice of half a lemon. Soak the gelatin in half a cupful of water for half an hour, then stir over hot water until melted. Add sugar, orange and lemon juice and stir until the sugar dissolves. Stand in a cool place while preparing the bananas. Skin them and press through a sieve. There should be two cupfuls of pulp, which should be added to the gelatin. Place on ice until partly congealed. Beat the whites of the eggs very stiff, and stir them into the banana mixture. Stir until stiff enough to retain its shape and turn into a mold. Stand in a cool place and serve with whipped cream.

GRAPES

Grapes for long keeping should have a tough, strong skin, be of a good quality, well grown and thoroughly ripened, and must have all defective berries removed. In putting away care must be taken not

to allow the bunches to touch each other, wrapping each bunch in a soft, white paper and keeping in a cool, dry room. Another good plan is to lay clusters rather closely in a stone jar holding two or three gallons, putting in first a layer of dry sawdust and then a layer of grapes and so on until the vessel is filled. In all cases it is best to dip the stem of the cluster or bunch in melted sealing-wax.

Grape Marmalade.—Stem and wash the grapes in a porcelain kettle with one-fourth cup of water to prevent burning. Cook until tender, then press through a colander. Measure the pulp and place again on the stove; allow to cook ten minutes. Then add two-thirds as much sugar as there is pulp, and boil again for ten or fifteen minutes. Put up in jelly glasses, or better still, pint or quart stone jars.

Grape Marmalade.—Heat jam grapes, strain and remove skins and seeds. To four pints of juice add three pounds of sugar, two pounds of raisins. Boil until it becomes like marmalade. Just before removing from the fire stir in one pound of English walnuts.

Grape Mush.—Stem and wash the grapes, measure and add to them half as much water. Cook over a slow fire until the seeds can be easily separated from the pulp, then turn into a cheese-cloth bag and let drip. Use the fruit juice in place of water with farina, or any other cereal; cook in a double boiler for the usual time. It is best served cold. Niagara or purple grapes may be used.

Grape Apple Butter.—Cook a half peck of grapes and run through a sieve, add a half peck of apples that have been peeled, cored and cut in small pieces, and four pounds of sugar; cook until thick.

CRANBERRIES

Cranberry Pudding.—Prepare a rich biscuit batter, using baking-powder and sweet cream, and stirring in flour until it is just as thick as it can be spread with a spoon. Spread a thin layer of this batter in one of the cake-pans having a funnel in the center, add a layer of cranberries, pressing them into the batter, then put in more batter and more cranberries until the dish is full. The last layer is of the batter. Then steam the pudding two hours and serve it hot with sweetened cream. Always put a cloth under the steamer cover to absorb the moisture, thus preventing it from dropping back on the pudding.

Cranberry Pudding—Another Recipe.—Another pudding may be made

of stale bread crumbs and cranberries. This is made exactly as you make bread puddings with raisins, except that a little less of the custard is poured over, for cranberries are more juicy than raisins. Bits of toasted bread may be used for this pudding. Put a layer in the bottom of the pudding-dish, then add a layer of the cranberries, and another layer of the toasted bread crumbs. The custard is poured over just before putting it into the oven.

There Is Another Pudding that can be made by stirring cranberries into Indian-meal pudding just before putting it into the oven. In making this pudding you scald the corn-meal with boiling water, then slowly add milk until you have a rather thin batter. Then add about two tablespoonfuls of sugar, one tablespoonful of butter, a little cinnamon and salt and two eggs to every quart of the thin batter. Use about a teacupful of cranberries to every quart of the thin batter, stirring them in the last thing before putting the pudding into the oven.

Cranberry Jelly.—Cranberry sauce often forms a jelly when cold, but cranberry jelly proper is always sifted and free from seeds and skin. The texture is not often clear and delicate like currant or apple jelly, for it is customary to use the pulp with the addition of water, as the fruit is somewhat deficient in juice. For one quart of berries, which have been picked over and washed, allow one cup of water and let them stew about twenty minutes. Turn into a hair sieve and rub the pulp through. Put on to boil again, add two cups of sugar and cook five minutes. Turn into a large fancy mold or individual glasses.

Cranberry Soy.—Add to a quart of stewed cranberries rubbed through a sieve a teacupful of sugar, scant half-teacupful of vinegar, a teaspoonful of salt, half a teaspoonful each of cinnamon, cloves and pepper. Boil gently until it will run slowly from a spoon.

DATES AND FIGS

Neither of these fruits is used in cookery to anything like the extent which their merits deserve. Dates and figs cost no more than many of the fruits more commonly used, and make a delightful change in the daily bill of fare. A few of either of these fruits, or a mixture of both, added to some of our commonest foods will change both appearance and taste until they seem like something entirely new. In the recipes for the use of these fruits, dates usually are

mentioned, but in each instance figs may be substituted if either taste or convenience makes a change desirable.

Date Bread.—When ready to put the dough into loaves to rise for the last time reserve what would make a fair-sized loaf and into it knead a cupful of finely chopped dates which have been well dredged with flour. Either form into a loaf or roll out and cut into shapes, but in either case rub over with melted butter. Let rise and bake.

A Cupful of Chopped Dates mixed with apple sauce makes a decided change in that dish, for unless the apples are very tart no sugar is needed, and the flavor of the dates is so distinct that one hardly recognizes the apple sauce which is the foundation of the dish.

A Fine Sandwich is made by spreading finely chopped dates between slices of bread which have been buttered and prepared as for any other sandwich. Another style of sandwich is made after this recipe: Make a dough with one cup of sugar, one-half cup of butter, one cup of sour cream, one egg and flour enough to make a dough which can be rolled thin. Roll this dough into two sheets. Cover one with split dates, place the other on top and press firmly together. Cut into fancy shapes and bake in a quick oven. Ice if desired.

A Date Rice Pudding which may be made beforehand and served cold is a very simple affair. Cook half a cupful of rice until tender in a pint of milk. While hot add half a cup of chopped dates, mix thoroughly and press into small cups. Serve cold with any pudding sauce preferred.

Another Pudding, to be served hot with cream and sugar, is made with one cup sour milk, one cup either of molasses or brown sugar, one tablespoonful of butter, one teaspoonful of soda, a pound of dates, either split or chopped, any spice liked, and enough graham flour to make a rather stiff batter. Steam two hours.

Date Gems.—To one cup of chopped dates add two cupfuls sweet milk, one tablespoonful of butter and one well-beaten egg. Sift two teaspoonfuls of baking-powder with three cupfuls of flour and beat into the batter. Bake in gem-pans twenty minutes in a hot oven.

A Dainty Confection.—Chop together an equal quantity of dates and nuts of any desired variety and moisten them with a sirup made by boiling sugar and water together. Split some dates into halves, pack as much of the mixture between the halves as can be made to stay in place, press firmly together and roll in powdered sugar. When pre-

paring the nuts save some whole, or half-meats, and place these in the center of some dates to make a variety.

Date Puffs.—Two eggs, a cup of sugar, a quarter of a cup of butter, a teaspoonful of baking-powder, a third of a cup of milk and a cup of flour; add to this a cup of stoned dates and steam till done in cups. Serve with a hard sauce or fruit juice as preferred.

Fig Pudding.—One cupful of molasses, one of chopped suet, one of milk, three and a quarter of flour, two eggs one teaspoonful of soda, one of cinnamon, half a teaspoonful of nutmeg, one pint of figs. Mix together the molasses, suet, spice and the figs cut fine. Dissolve the soda with a tablespoonful of hot water and mix with the milk; add to the other ingredients. Beat the eggs light and stir into the mixture; add the flour and beat thoroughly. Butter a round mold and steam for five hours. Serve with cream or white sauce. Date pudding may be made in the same way, dates being substituted for the figs.

Fig Custard.—Make a baked custard, previously covering the bottom of the cups or pudding-dish with shredded figs. Serve very cold.

Stuffed Figs with Whipped Cream.—Roll figs until pliable, make an incision in one side and fill with a teaspoonful of chopped nuts, any kind. Fasten with thread, cover with boiling water and cook fifteen minutes. Remove the threads, sweeten and serve with whipped cream.

PUDDING SAUCES

Orange Sauce.—Two heaping teaspoonfuls of corn-starch, dissolved in water, with boiling water poured on to make a smooth, thick paste; add a beaten egg, a heaping teaspoonful of butter and a small cupful of sugar. When cooked add the juice of two oranges. Serve hot.

Raspberry Sauce.—A very good dumpling sauce is made by simply whipping together until very light half a pint each of cream and raspberry juice. The cream should be thick and rich.

Chocolate Sauce is made by melting three ounces, or three squares of chocolate which is dissolved in one-half cupful of sugar and one-half cupful of boiling water. Stir until smooth and then add one-fourth tablespoonful of vanilla.

Caramel Sauce.—Put one cupful of sugar in a small pan and stir on the fire until brown; add one cupful of boiling water and simmer fifteen minutes. Set away to cool slightly and serve with pudding.

Fruit Pudding Sauce.—One-half cupful sugar, one cupful boiling water, one tablespoonful corn-starch, same of butter, one and one-half tablespoonfuls of lemon juice and a few gratings of nutmeg. Mix sugar and corn-starch, add water gradually, stirring constantly; boil five minutes, remove from fire, add butter, lemon juice and nutmeg.

Fruit Cream Sauce to serve with fruit cake when used as pudding. Take one cupful of sugar, one-half cupful of butter and four tablespoonfuls each of cream and fruit juice. One usually has a little fruit juice left over when opening the canned fruit in the winter. Heat this over and can it again for just such purposes. Put the sugar, butter and cream into a custard kettle and beat it until it becomes thick and frosty, then add the fruit juice just before serving.

Foamy Sauce.—One-half cupful of butter, one cupful of powdered sugar, one teaspoonful of vanilla, one-quarter cupful of boiling water, two tablespoonfuls of sherry, the white of one egg. Cream the butter and sugar, add the vanilla and wine and beat them well. Just before serving stir in the boiling water, add the whipped white of one egg and beat until foamy.

Pudding Sauce.—Take one cupful of powdered sugar and one-half cupful each of butter, sweet cream and boiling water. Rub the butter and sugar together, then add the cream and the boiling water and let it cook for two minutes in a double boiler, stirring constantly. Flavor with vanilla. This is a very simple sauce and may be used for other puddings, but it is especially good when the nut cake is to be used for a pudding.

Brandy Sauce.—Put into the saucepan two cupfuls of water with one cupful of sugar. When the sugar is dissolved and the water boils add slowly a heaping tablespoonful of corn-starch diluted with a little cold water. Stir until the corn-starch is clear, then remove from the fire and add two tablespoonfuls of brandy. Serve hot.

Simple Sauce.—One-half cup of sugar, one-fourth cup of butter, one tablespoonful of flour; mix all together, add one grate of nutmeg and two cupfuls of hot water; boil five minutes.

HOW FRUIT FLAVORS SHOULD BE BLENDED

A sort of general classification of the various fruit flavors that blend will prove a ready reference for the housewife who wishes to exercise her inventive skill on something a little different. They

may be combined with the palatable results found in many of the best fruit salads, permitting various substitutions as convenience or fancy may suggest.

Cranberries and raisins combine in a most delicious flavor when used in the proportions of a half teacupful of raisins to one quart of cranberries. Raisins and nice, tart apples yield a mellow, toothsome flavor, while upon the pineapple we may ring a great variety of changes: Pineapple and orange, for instance; pineapple, orange and banana; pineapple and lemon; banana and lemon; banana and orange; banana, lemon and orange.

Raspberries and currants, two parts of the former to one of the latter, blend delightfully, and there is perfect harmony in red raspberry and lemon. Strawberries, so delicious in themselves, form delectable compounds when used as a basis with the following additions: notably with orange; pleasing with lemon when sweet strawberries are used; while strawberries with vanilla yield a peculiarly delightfully flavor difficult to analyze. Strawberries, pineapples, bananas, lemons and sweet Florida oranges, all in one, combine in luscious effect, if time be given them to blend in one harmonious whole.

Cherries blend with pineapple. If the juice from a can of pineapple be added to one quart of cherries, and this frozen according to recipes for frozen fruits, it will please the most exacting taste. Blackberries, blueberries or grapes will never disagree with the lemon, neither will pear, apple or quince; pear, pineapple and cherries, three delights in one, never disappoint, and for ambrosial effect in the way of a tutti frutti of candied fruits you may add to a pure, sweetened frozen cream, cherries, strawberries, apricots, angelica, pears, Chinese oranges and a little candied ginger. With perfect harmony of flavor you may combine sultanas, figs, dates and citron in the same way, all cut fine, and add also, if you wish, nuts and shredded cocoanut.

PRESERVING AND CANNING

There is an art about preserving and canning. Pleasure and profit wait upon this art when it is once learned. The table reflects the thriftiness of the housewife if it shows various fruits tastefully preserved.

To be successful with fruits absolute cleanliness must be observed. This does not mean simply washing and wiping the cans; it means to have them absolutely sterile, sufficiently heated to kill anything that may fall into or upon them from the air. While the fruit jars generally receive careful attention from housewives the matter of sterilizing the covers before using is often overlooked. These may have lain for a long time upon the top shelf of some closet and should be put into cold water and this brought to the boiling point. They should then be taken out one by one with a clean skimmer and each slipped upon its jar. They should not be handled with the fingers except to screw quickly into place, nor be left on the table, nor wiped with towels that have been hanging in the kitchen. Any of these things might make useless the sterilizing process, as germs may be picked up in this way after the sterilization has been accomplished.

The process of canning different small fruits varies but little. Select perfectly sound and fresh fruit. This is the first secret of keeping canned fruit. Fruits may be canned with or without sugar. Sugar takes no part in their preservation and often causes fermentation. All fruits should be lightly cooked (fruit does not require as much cooking as some are ready to believe) that they may retain their natural flavor.

The cans should be filled to overflowing, for as the liquid cools it will condense. Look over the fruit carefully, wash and put in granite or porcelain kettle, then add the sugar. Let stand a few minutes to dissolve the sugar somewhat and extract some of the juices before heating them, then let them come to a boil for about a minute for most small fruits.

To keep the jars from breaking set them in a dish of cold water so the water will be about two inches deep around the bottle, or stand them on a towel wet with cold water.

Fill to overflowing and turn the covers on tight; as the cans get cool the covers can again be tightened. You can do the work more rapidly in this way than by filling the jars with uncooked fruit. In the latter method put them into a boiler of cold water filled nearly to the tops of the jars, and then brought to the boiling point, and let boil from ten to fifteen minutes. This is the best way to have fruit retain its shape, but as far as the keeping quality is concerned there seems to be no difference.

In Canning Peaches and Pears, peel them, take out pits or cores, keeping them closely covered, and make a sirup, cooking only a small quantity in the sirup at one time, care being taken not to break the pieces. Fill the cans with the pieces of the fruit, then pour on as much of the sirup as the can will contain and cover as for other fruit.

For Canning Apples you need not use sugar, and in this way they retain their flavor and color and are just as nice for sauce and pies as fresh apples.

In Canning Ordinary Plums, after washing put a quantity in a granite kettle and cover with cold water, let them come to scalding point, then add a teaspoonful of soda to each two gallons of water, which will make the skin tender and take away the puckering taste that some plums have, skim out the plums, add the sugar and can in the usual way.

Blackberries.—Fill the can with raw berries—don't press down—jostle the can to make them settle. Fill with water, and seal. Put in boiling water and boil ten minutes. Take out and seal vent and boil ten minutes more.

In Making Jams the fruit should be carefully cleaned and bruised, as washing it for cooking prevents the fruit from becoming hard. Boil fifteen or twenty minutes before adding the sugar, as the flavor of the fruit is thus better retained, then boil slowly for half an hour longer. Allow about three-fourths of a pound of sugar to a pound of fruit. Jams require almost constant stirring, and every housekeeper should be provided with a wooden paddle for stirring jams and marmalades.

Jellies.—The juices of some fruits will not form jelly, and only that of a very few will jelly without sugar. There is no reason, however, why jellies should always be made a pound of sugar to a pint of juice. Quinces and currants, as well as the ordinary crabapple, cranberry and green grapes, make better jelly when only half a pound of sugar is allowed to a pint of juice. Small fruits should be simply mashed and drained. Boil the juice and skim, have the sugar heated hot, then add slowly, constantly stirring until the sugar is dissolved. Generally it will be jellied by the time it comes to a boil. A little may be tried in a saucer; if it wrinkles or if it hardens as dropped from the spoon it is ready for the glasses and should be skimmed,

strained and put into them. If it is boiled too long it will rope, be like sirup, and never go back to the jelling point.

For Apple and Crabapple Jelly, wash the apples and quarter without paring; put in a granite or porcelain-lined kettle, cover with cold water and bring to boiling point. Turn into a jelly-bag and drain, boil and skim, add the sugar, boil and skim and pour into glasses. If the jelly seems thin it will help to thicken by standing in the sun a day or two.

KEEPING CANNED FRUIT

It Is Best Always to Label with name and date the glass jars of fruit, berries, preserves, etc. The gummed flaps of unused envelopes, or those which have been used, but not sealed, are useful for this purpose.

One Word about Fruit Jars.—If every housewife will use sawdust and pack her jars in it, it will keep them cool in summer and keep them from freezing in the winter. Keep all canned fruits in a cool, dark place, because they lose flavor and change color by being exposed to the light. Jellies should be kept where it is cool, dry and dark.

Best Protection for Jelly.—Jelly keeps much better if hot paraffin is poured over each tumbler than when covered with paper.

CANNING VEGETABLES

To can vegetables use glass jars of uniform size, packing in the vegetables firmly. Screw on the tops lightly and set the jars on a rack or board in the boiler. Fill with warm water until it reaches half way to the top of the jars. Cover and boil four hours. Take off the tops to let out the gas and fill with boiling water. Screw on the covers tightly and lift out the jars with a damp towel. The secret of keeping vegetables perfectly by this method lies in keeping the air from them after boiling. That is why they should be sealed nearly air-tight before they are boiled, and why but one jar should be removed at a time from the boiler, sealing it immediately.

To Can Corn, Beans, Peas, Etc.—After cleaning the ears of corn cut off with a sharp knife about two-thirds of the corn, then with the back of the knife scrape the rest of the kernels off the cob; fill the can or jar one-third full of corn pack down gently with the small end

of a potato masher, put in more corn and pack again, and continue until the can is full to the top. Put on the rubber and screw the top on very tight, put some hay or straw in the wash-boiler and on it set (or lay) the filled cans; fill the boiler with cold water (be sure to cover the cans), set the boiler on the stove and let boil for three hours or more. When you remove the cans try if possible to screw the cover on more securely. After the jars are cool wrap each one in paper and set away in the dark. This is essential. Succotash and green beans are put up in the same way, also peas. Put in the cans and shake down very closely (you cannot pack them as corn); put on the rubbers, screw on the covers and boil the same way as corn. Peas will shrink in the jars, but corn will not if packed hard.

Salting Down Green Corn.—Cover the bottom of a clean keg or barrel with salt, put in a layer of corn with the husks on, cover with salt and proceed in the same manner with alternate layers of salt and corn. When all is in, lay on a large stone and cover with a pickle of salt and water. To use, remove the husks, soak twenty-four hours in cold water and cook as new corn. If not fresh enough change the water and soak longer. Or leave all but the outer husks on the corn and tie down tightly over the cob at the silk end; pack closely in a clean keg or barrel, lay on a weight, and cover with brine about two-thirds the strength of pickle for meat.

To Can Corn and Tomatoes Together.—Cook the corn on the cob as if for table use, and then cut the kernels off. Peel and slice tomatoes as for cooking. Mix a pint of the cut corn with a quart of the prepared tomatoes and cook long enough to cook the tomatoes thoroughly. Season rather highly with salt and pepper and can while boiling hot.

Tomatoes.—Take a small thin sack, sew a strong loop across the top to lift it by, fill with tomatoes and put in boiling water two minutes; cut out the hard part where the stem grew and the skin will slip off. Pack in can, pouring off some of the juice, and you will have more room for tomatoes. Seal and boil ten minutes; seal the vent and boil thirty minutes.

When Canning String Beans, cook them in a very little salted water for ten minutes.

All Canned Vegetables should be removed from the can and exposed to the air for at least fifteen minutes before they are prepared for the

table. This exposure gives them more of the flavor of the fresh vegetables and renders them more wholesome.

CANDIES AND SWEETMEATS

As nearly every one is born with a "sweet tooth" it is but natural and right that this craving for sweets should be gratified, at least occasionally. For those engaged in active pursuits requiring more or less muscular exertion nature demands a good per cent of sugar. Here are a few recipes for simple, wholesome and palatable sweetmeats and dainties which may please better than some of the high-priced, or the cheap adulterated candies in the stores.

Peanut Candy.—Carefully roast two quarts of peanuts till of a rich cream tint; shell, removing the inner skins as well; place one and a half pounds of granulated sugar in a saucepan with just sufficient water to moisten, adding a lump of butter the size of an egg. Boil until a little dropped off a spoon into a cup of cold water is crisp, and shows a light cream color. Have two-thirds of the shelled nuts spread upon buttered plates; pour candy over them and immediately while still hot sprinkle on the remaining nuts. When cold break into convenient sized pieces. This will be found crisp and delicious. A grated cocoanut may be substituted for the peanuts if desired.

Sugar Sirup.—Two pounds sugar to one pint of water. Boil ten minutes. Add one cup of pure maple sirup as flavoring. Pour the sirup into bottles and keep sealed in a cool place.

Hickory-nut Candy.—Boil till thick two cups of sugar and half a cup of water, flavor with vanilla or lemon, stir in one cup of hickory-nut kernels, pour the candy into a flat dish and cut it in squares when cold.

Molasses Taffy.—Molasses two cups, sugar one cup, butter size of a small egg, soda one-half teaspoonful. Put molasses, sugar and butter together and boil to nearly the brittle point, add the soda, and if not brittle when dropped into cold water boil until it is. Pour into buttered plates to cool, then pull.

Fudges.—Two cups sugar, one cup milk, one tablespoonful butter, quarter cake chocolate, pinch of salt, one tablespoonful vanilla. Cook until thick, remove and beat to a cream. Put in buttered dishes to cool and cut in squares.

Bonbons.—Stone one-half pound of fresh dates, seed one-half pound of layer raisins, and remove the stems from one-half pound of

fine figs. Force all through a meat chopper with three-fourths of a pound of mixed nut meats chopped rather fine—almonds, pecans and walnuts are the best. Moisten with sweet cream and form into miniature balls; roll in confectioners' sugar and then in freshly shredded cocoanut.

Popcorn Balls.—Slowly beat one cupful of strained honey and boil until it will stiffen and crack when dropped into cold water. Pour it at once over one quart of freshly popped corn and shape into balls, greasing the hands with a little butter to prevent sticking.

Popcorn Wafers.—Make boiled frosting with one cupful of sugar and white of one egg. Stir into it thickly nice white popcorn, buttered and salted. Put on wafer crackers, having the frosting an inch thick. Brown slightly in oven.

BEVERAGES

Drink plenty of water, so say the doctors. They do not, as a rule, advise it in quantity with the food, but in the morning before breakfast and often midway between meals. Naturally it should be as pure as possible, either boiled, distilled or filtered, unless its source is of unquestionable purity.

Favorite Home-made Beverage.—A drink of which most men are fond may be made by adding one teaspoonful of sifted ginger, three tablespoonfuls of sugar and a half cupful of vinegar to every quart of cold water. Stir this well and it is ready to serve.

Koumyss and How to Make It.—In making koumyss use quart bottles, putting into each four tablespoonfuls of fresh yeast and one tablespoonful of powdered sugar; then filling it with warm milk fresh from the cow. The bottles are corked tightly and allowed to stand in a warm place until the liquid begins to thicken, then placed on their sides in the cellar for a week, when they are ready for use.

Hot Apple Punch.—This is a beverage built to serve on Hallowe'en night, but no doubt will be fully appreciated at other times. Roast three high-flavored apples and remove pulp to a deep pitcher. Add to skins one teaspoonful cinnamon, half teaspoonful each of cloves and grated nutmeg. Mash and add to pulp, and pour over three pints hot sweet cider.

Egg Cocktails.—Into a tall, slender glass pour a tablespoonful of catsup, six drops of lemon juice, two drops of Worcestershire sauce,

a dash of paprika, a few grains of salt and pepper. Over all break a fresh egg. Serve individually.

Egyptian Coffee is black coffee flavored with attar of roses.

How to Make Ginger Beer.—Break two ounces of ginger root into small pieces and put it into a large crock with two ounces of cream of tartar, the rind and juice of one lemon and one and one-half pounds of sugar. Four quarts of boiling water are poured over this and allowed to stand until it is lukewarm, then one-half cupful of yeast is added. This should stand for six hours, then strain it, put it into sealed bottles and keep in a cool place.

Another Recipe for Ginger Beer.—Scald a sliced lemon and a tablespoonful of ginger in a gallon of water, sweeten it to taste, and when it is cool add half a pint of yeast.

How to Make Root Beer.—In making root beer take a cupful each of bloodroot and prickly-ash bark broken into bits, two cupfuls each cherry bark and poplar bark, four each of burdock root and dandelion root, eight each of spikenard root and sarsaparilla, a double handful of hops and a cupful of yeast. Wash the roots and barks thoroughly, cover them with cold water and allow them to boil slowly until the strength is extracted, then strain, dilute the concoction to the required strength and sweeten to taste. When cool add the yeast and let it stand in open crocks for twenty-four hours, then bottle, sealing closely. This is ready to drink in about two days. If spruce twigs or wintergreen are added it improves the taste.

Wash Your Lemons.—Put the lemons in cold water for a brief period and dry them off with a clean, rough crash towel. Then you can enjoy your lemonade, juice, pulp and circles of rind all in all, without concern or misgiving, provided your water is pure.

There Are Two Ways of Making Lemonade, to squeeze the juice into cold water—this is the shortest way; or to cut in slices and then boil it. Lemonade is one of the best and safest drinks we have and is good for anybody whether in health or not. It is suitable for all stomach diseases and is excellent in sickness. The pips, crushed, may be mixed with water and used as a drink.

Soda Lemonade is especially fine for people with a gouty, rheumatic tendency. Squeeze the juice of half a large lemon (free from seeds) into a tumbler, add to it a teaspoon of sugar (as heaping as it is possible to make i) stir to dissolve it, fill up a scant three-quarters

with ice-water and then stir in a scant third of a teaspoon (level) of bicarbonate of soda. When the foam nears the top of the glass you may begin to sip from it, or it may surprise you by overflowing. If you prefer your lemonade sweeter you can regulate the quantity of sugar after trying the recipe; if you make it too sweet it will have a flat taste.

Wholesome Drink for Hot Weather.—A fine summer drink for the harvest field, which is both wholesome and palatable, is made as follows: Make oatmeal into a thin gruel, season it to taste with salt, sugar and a little grated nutmeg, with one well beaten egg to each gallon stirred in while the gruel is warm. Dilute this to proper thickness for drinking and strain it through a cloth. It is most refreshing to the hot and thirsty workmen. Even raw oatmeal stirred into a bucket of cold water makes a drink refreshing and cooling.

How to Preserve Fruit Juices.—Fruit juices may be put up and used for beverages at any time of the year in the following manner: Heat the fruit and strain it as in making jelly, then cook it for fifteen minutes, skimming it until it is clear. Add one cupful of heated sugar to every quart of juice, boil it ten minutes and seal it up in cans. When wanted for use a few spoonfuls are added to a cupful of cold water.

To Preserve Blackberry Juice.—If people understood how valuable as a medicine blackberry juice (not wine) is, they would bestir themselves to preserve as much as possible. In all summer complaints its equal cannot be found as a food and medicine. There are two ways of keeping: One is canning the berries and straining it out as you need it; the other is straining it and bottling it. Boil half an hour with cork stopper in bottle. When done press stopper in tightly; tie a cloth over it and put away in a dark place. It would be well to take the vessel in which the bottles were boiled from the fire and let the water get cold before taking them up, as the cold air might break them. All kinds of fruit juices can be preserved in this way.

Grape Wine.—Crush twenty pounds of grapes; put them in a wooden tub and pour over them six quarts of boiling water; let them stand four or five days in a warm room, stirring them three or four times each day; strain and add ten pounds of sugar; then put all into a cask. The cask should be full. As the wine ferments a part of the

contents will run out of the open bung. In order that this process may be complete more of the juice should be added. After fermentation ceases close up bung and bottle in the spring.

Elderberry Wine.—Eight quarts of berries, four quarts of boiling water poured over the berries; let them stand twelve hours, stirring now and then; strain; add three pounds of sugar to four quarts of juice, one ounce of powdered cinnamon, one-half ounce of powdered cloves. Boil five minutes; then set away to ferment in a stone jar with a cloth thrown lightly over it. When it is done fermenting pour it off carefully, bottle and cork tightly.

To Keep Cider Sweet.—Cider brought to a boil, skimmed and then put into bottles in cool cellars will keep as long as wanted. Those who are fond of sweet cider, in this way can arrange to have it at all times. If a slight fermentation is desired a gallon or two may be drawn into a common jug and exposed to the air for a day or two. Cider should be boiled in copper or iron, and not in tin or galvanized iron pans.

Grape Juice Can Be Treated in the Same Way, and a wholesome, sweet and palatable drink always be kept at hand.

Orangeade.—One egg, juice of one orange, two spoonfuls sugar, two-thirds cup water. Beat egg light, mix sugar and orange juice, then add egg and last the water, stirring all well. Milk can be used in place of water. Nice for thirsty invalids.

Cider.—Pure cider cannot be made from rotten fruit. The best cider is made late in the fall from winter apples.

To keep well cider should be stored in a cool cellar where fermentation will be slow. When cider has passed through the first violent fermentation and when it is safe to do so, the barrel should be filled up full and bunged tight. It should be left for two or three months and then carefully drawn off into bottles or jugs and sealed. It will then keep sweet in any ordinary cool cellar. Cider cannot be kept sweet without the aid of chemicals, which affect both its flavor and healthfulness. When kept in barrels which gradually become empty as it is drawn off, air naturally takes its place. This produces constant fermentation and it will first become hard, and in due time go into vinegar. Grape juice treated in the same manner will act in about the same way. It is only wines that have been fortified with spirits and sugar that will remain sweet in barrels, while sour wines must be

bottled and properly stored to keep just as when first put up. With some modifications the treatment of grape wine and cider is very much alike.

Piquette, a French "Soft Drink."—Five pounds of raisins, five pounds of dried apples and five gallons of water. Put in an open cask and let stand for three days; bottle with a half teaspoonful of sugar and a bit of cinnamon in each bottle. Vary the flavor to suit the taste.

Raspberry Acid.—In four pints of water dissolve three ounces tartaric acid; pour it over four quarts of raspberries and let stand twenty-four hours; strain without pressing, and to each pint of juice add one and one-half pounds of sugar; stir till it dissolves. Let stand forty-eight hours, bottle and seal. To use, put a little into water.

Oatmeal Drink.—Dissolve one-quarter cup of oatmeal in a jug of water, let settle, and drink cold. Take one-half pound of sugar, one-half a lemon sliced small, and one-half pound fine oatmeal; mix them with a little warm water first, and then pour on four quarts of boiling water; stir well together, let settle, and use cold. Any other flavoring can be used instead of the lemon if desired. Mix together gradually, in four quarts of boiling water, one-half pound sugar, one-half pound fine oatmeal and four ounces cocoa. Use when cold.

Pineapple Beverage.—Take one pineapple, peel, slice and pound to a pulp. Take two cups of water, add three-fourths pound sugar, boil, skim, and pour it hot on the pineapple pulp; add the juice of a lemon and let stand two hours covered; then filter through cloth and add two pints of cold water. Ice when served.

Apple Water.—Take tart apples, quarter and core; add one-half their weight of sugar, cover with water and simmer till tender; strain through a jelly bag and cool. Put pounded ice in the glass when you drink it.

Cocoanut Beverage.—Break two cocoanuts, saving the milk carefully; grate the cocoanuts, add them to milk and also four pints of water; put in a saucepan and boil five minutes, stirring with a wooden spoon continually to prevent burning; then strain, add three-fourths pound of powdered sugar and mix well. Ice it and serve.

Gooseberry Shrub.—Take green gooseberries, pour on boiling water to cover, let stand till cool with a cloth spread over the jar; strain off the juice, heat it and pour on again; then strain, and to each pint of juice add one pint of sugar; boil, skim and bottle.

CHAPTER XII

WOMAN'S TOILET

How to Perfect and Maintain Beauty in All Its Forms—Including Instructions and Recipes on the Care of the Complexion—Removal of Freckles, Blemishes, Etc.—How to Treat the Hair, Eyes, Teeth, Hands and Feet—Also How to Develop or Reduce the Form, with General Instructions for the Maintenance of Health and Beauty.

This subject is one about which every woman should have definite and practical information. There are few of the feminine sex who can spend a large share of their time in caring for their person, although all owe it to themselves, as well as others, to present as attractive an appearance as possible. This statement is to be particularly emphasized, when it is remembered that cleanliness, exercise and common-sense diet are invariably placed, in these days, at the foundation of all true comeliness.

THE COMPLEXION AND HOW TO CARE FOR IT

As long as there are women in the world there will be complexions to worry about, and there is some beneficence in such discontent, for it argues a superior feminine nature to try and secure a good complexion. To be satisfied with a sallow, muddy skin, when it can be rectified, is not very complimentary to the individual. One cause of a poor complexion often is indigestion, and this trouble can be cured by eating the proper food and using precaution. Since frequent bathing is necessary to secure perfect health it also promotes good looks. The restfulness and sense of delightful cleanliness that follows the bath are well worth any trouble or inconvenience they may cost us.

An excellent bathing recipe to secure a healthy glow, and which leaves the skin soft and velvety, is a half pound of borax dissolved in twelve gallons of warm water. It dissolves quickly, makes the water soft and cleanses thoroughly, leaving you with a feeling of restfulness which is wonderful. It is also soothing to any skin irritation or heat

which may break out upon the body in very hot weather. Every woman should keep a flesh brush for occasional use.

It is a good plan upon returning from a walk or drive or any out-of-door exercise to bathe the face, in order to remove the dust that has gathered upon it. Almost every woman uses a little face powder occasionally, and as there are many injurious articles on the market it is well to prepare it at home. A few cents will supply the needful quantity. Mix half a pound of finely powdered starch with two and a half ounces of freshly powdered orris root, then run through a sieve. Put a little in a bag of thin flannel and apply it by shaking it lightly on the face.

"Of course the basis of a good complexion is cleanliness—in fact it even affects the arch of the neck," says a writer, "for every woman can hold her head higher when she knows she is absolutely clean."

It is impossible to give direct instructions to meet every case, but we present many useful recipes for the care of the complexion and removal of blemishes therefrom, all of which may be used without injury. The general rules for the complexion may be mentioned as below:

1. Don't use hard water at all; use warm water at night.
2. Don't fail to thoroughly dry the face. Don't use fancy soaps, but pure white castile.
3. Don't fail (after washing) to rub the face up and down, especially near the nose.
4. Don't eat fat meats, pastries, salads or highly spiced foods.
5. Don't drink strong tea or coffee.
6. Don't use cheap face powders.
7. Don't worry; it produces wrinkles.
8. Don't give way to violent emotions. By following this rule you will do more to help your complexion and beauty than by using all the toilet creams invented. Now as to details.

HOW TO TREAT THE COMPLEXION

The Complexion Brush.—The correct complexion brush is made of firm bristles about three-quarters of an inch long. These bristles do not mat down when put in water. The brush should be used every night with warm water and castile soap, *crème marquise* being applied afterward. This treatment is excellent for any bad com-

plexion, because it stimulates the glands and skin and stirs the blood vessels to action.

Creme Marquise.—One-quarter ounce of white wax, two and one-half ounces spermaceti, two and one-half ounces oil of sweet almonds; melt, remove from fire and add one and one-half ounces rosewater. Beat till creamy, not till cold. Use only one-fourth ounce of white wax—more will make it too hard.

Face Powder.—Talcum powder, sixteen ounces; bismuth oxide, one ounce; zinc oxide, one ounce. Sift through silk bolting cloth.

Complexion Powder.—Two ounces of purest zinc oxide, seven ounces of rice powder, two ounces of precipitated chalk, one ounce of talcum powder, one ounce of powdered orris root, two or three drops of oil of rose. Tint with a suggestion of powdered carmine. Mix by sifting many times.

Lavender Lotion for Softening the Water.—Four ounces of alcohol, one-half ounce of ammonia, one drachm of oil of lavender. A teaspoonful to a bowlful of warm water.

Dainty Perfume.—Many women use quite too much perfume. The sweetest fragrance is that of freshly laundered linen and a daily scrub. If one prefers one can touch the ear lobes and hair with a tiny suggestion of violet or rose, but the scent must be both delicate and elusive.

Violet Sachet.—Eight ounces of ground orris, five drops of oil of bergamot, three drops of oil of bitter almonds, seven drops of oil of rose, one and one-fourth drachms of tincture of musk. Mix the whole thoroughly. Place in tiny cheese-cloth bags and lay in dresser drawers and gown boxes.

REMOVING BLEMISHES

If you have any blemishes to be removed follow the directions to be found hereafter:

For Florid Complexions.—Anyone suffering from a florid complexion must take extremely good care of the diet, avoiding highly spiced dishes, rich pastries, hot drinks, etc. Every morning jump into a cold salt water bath. At night apply crême marquise to the complexion.

For a Rough, Harsh Complexion.—A rough, harsh complexion is most frequently caused by hard water and impure soaps. Use the

pure white imported castile, and get a correct complexion brush. Use the brush every night with warm water and the soap, drying the face thoroughly and rubbing in *crème marquise*. This is an absolutely sure cure for blackheads if the scrubbing is thorough, and it certainly will remedy any case of roughness requiring treatment.

For Red Face.—If you are troubled with an over-ruddy complexion you should use only tepid or cold water on your face. Avoid highly spiced, stimulating dishes, also hot drinks and fatty foods. After bathing the face at night apply *crème marquise*.

Lotion for Oily Skin.—Dried rose leaves, one ounce; white wine vinegar, one-half pint; rose water, one-half pint. Pour the vinegar upon the rose leaves and let it stand for one week; then strain and add the rose water, throwing the rose leaves away. The lotion may be used either pure or diluted by putting about a tablespoonful into a cupful of rainwater. Do not keep in a metal vessel.

Ointment for Red Nose.—One drachm of powdered sulphur, two and one-half drachms of powdered starch, one and one-half ounces of ointment of zinc oxide, three drops of oil of rose; mix well. Apply at bedtime.

How to Treat Enlarged or Indented Pores.—When the pores of the skin become indented there is nothing more speedily effective than scientific massage and electric treatments. Bathing with cold salt water every morning is very good. At night bathe the face with a complexion brush, warm water and pure castile soap, afterward anointing with *crème marquise*.

How to Remove Blackheads.—Blackheads are caused by not washing the face at all, or by doing so imperfectly. Cleanliness is the permanent remedy for same. To remove blackheads take plenty of hot water, pure castile soap and a complexion brush, and wash your face thoroughly every night. Rinse dry, rubbing it both up and down. Twice a week apply a saturated solution of magnesia, put on with a sponge. If this is followed faithfully and your diet is what it ought to be, you will not be troubled with blackheads.

Facial Eruptions and How to Cure Them.—Facial eruptions are actual beauty ills that cannot be denied. Every woman thus afflicted should make great efforts to be rid of these horrors. Diet is most necessary, and the daily bath with salt water and a bath brush essential. At night the face should be washed thoroughly with white castile soap,

warm water and a complexion brush of bristles, for soap and water are fine antiseptics. Every morning open the pimples with a needle and apply hydrozone. This unites with the poisonous fluids and burns them to a crisp.

To Remove Moles.—The acid nitrate of mercury is recommended as effectual for the removal of small moles. It should be applied with a splinter of wood in very small quantities for a few seconds, carefully avoiding the sound skin. There is no pain of consequence and the mole shrivels away and drops off in a few days.

Treatment for Large Stubborn Moles.—Acetic acid applied to moles will often remove them, but it is best to consult an electrolysis operator.

Freckles and How to Remove Them.—A very successful mixture for removing freckles consists of two parts of sulpho-carbolate of zinc, twenty-five parts of distilled glycerine, twenty-five parts of rose water and five parts of scented alcohol. Apply the mixture twice daily for from half an hour to an hour, and then wash it off with cold water.

For Rough Skin, Sunburn, Etc., Cosmetic Jelly Better than Vaseline or Cold Cream.—Sixty grains of gum tragacanth, seven ounces of rose-water; soak for two days, adding one ounce of glycerine and one ounce of alcohol, a few drops of oil of rose and a teaspoonful of borax.

Ointment for Severe Cases of Freckles.—Spermaceti, one hundred and twenty grains; white wax, one hundred and twenty grains; oil of sweet almonds, four drachms; salicylic acid, eight grains; white precipitate, four grains. Rub on every night with a clean finger.

Tattoo Marks—How to Remove Them.—Those who have been so unfortunate or foolish as to have tattoo marks made on their skin usually wish to remove them in later years. In some cases they are quite indelible, but in some instances the drawings have been taken out by being first well rubbed with a salve of pure acetic acid and lard, then with a solution of potash, and finally with hydrochloric acid.

Moth-patch Ointment.—One ounce of benzoinated lard, one drachm of white precipitate, one drachm of subnitrate of bismuth. Bathe the face at night with warm water, pure castile soap and a complexion brush. Rinse and dry thoroughly, then apply the ointment. Wash

away next morning with tepid or cold water. Drink much butter-milk.

Inflamed Face.—If your face is inflamed this will heal it: A saturate solution of boric acid is good for almost any sort of inflammation. It is often applied after the electric needle has been used for the removal of superfluous hair, and it helps the tissue to heal at once. Put one ounce of the boric acid crystals in a quart glass jar and fill with hot water. Apply a suggestion of this twice a day with a bit of absorbent cotton.

How Scars May Be Removed.—The X-ray is used quite successfully now for removing scars. Certain medicinal agencies are applied at the same time. If the scar is not very deep it can be blotted away to a considerable extent by a warm solution of boric acid. Dissolve one ounce of boric acid crystals in a quart of water. Apply with absorbent cotton night and morning.

An Easy Way to Remove Warts.—Take a piece of bichromate of potash the size of a small hickory-nut, crumble and place in a two-ounce bottle. Fill with water, and with a bit of cotton on the end of a toothpick apply every day to the warts.

A Simple Cure for Eczema.—The cosmetic jelly spoken of frequently in this chapter is a simple, harmless and effective remedy for eczema. The recipe is: Thirty grains of gum tragacanth, seven ounces of rose water, one ounce of glycerine, one ounce of alcohol, one teaspoonful of pure borax. Combine the tragacanth and the rose water, let stand for three or four days, add the glycerine, then the alcohol, then borax. Perfume with a suggestion of oil of rose. However, if the trouble is very severe, you should consult a physician at once. It does not pay to let things like that continue.

Cancers, Tumors and Acne.—The X-ray, which cures cancerous growths and tumors, will do away finally and completely with a bad, persistent case of acne. Two treatments a week are necessary, and the eruptions will absolutely disappear. It is essential that the beauty patient should turn over a few leaves in her book of daily living. Certain digestion-irritating foods should be avoided, and plenty of water should be taken into the system each day. The quick bath every morning with cold salt water, a scrubby bath brush that takes hold as if it meant it and a speedy drying with a coarse towel will stimulate the glands all over the body. At night bathe

the face with warm water and pure casile soap, using a complexion brush to keep the skin clean and healthy. Afterward apply an ointment made of one drachm of precipitated sulphur and lanolin.

THE CARE OF THE EYES

If you would have good eyes and eyesight you must take good care of them, for like all delicate parts they require constant and careful attention. When you arise in the morning don't be surprised if you see black spots for a minute or two. The pressure on the eyeball flattens the lens of the eye and causes this. Don't rub your eyes with your fingers; bathe them at once in moderately cold water and wipe them inwards. This prevents "crows'-feet." Don't let soap get into the eyes. If the eyes are inflamed an application of hot water and milk in equal parts will help greatly. Dry with a soft linen cloth. You must not wear a veil, or read in bed. Don't try to read by a flickering light, or in the twilight. Don't sew or read facing a light. Rest the eyes occasionally and be careful to avoid straining them. The very moment the eyeballs ache work should be suspended. This is imperative if you would save yourself untold trouble in the future.

To Those Who Wear Glasses.—It is a good idea to have your eyes examined by a good specialist once in a while. There may have been some changes in the sight, and the glasses which were all right when received are not suited to the changed conditions.

Dark Rings under the Eyes and How to Remove Them.—Dark rings under the eyes show that the body, in one way or another, is being overtaxed by worry, or that the physical system is deranged. Lack of rest, late hours, or an irregularity of the kidneys will cause those gray, heavy lines. Drink plenty of water every day; get out of doors regularly, look after the diet and get to bed early. Every night apply Orange Flower Skin Food to the face. It will help the complexion generally.

Frowning, and How It May Be Cured.—There are usually two reasons for the frowning habit—bad eyesight or an easily irritated mentality. Unpleasant thoughts that go flitting through one's mind leave a track behind, and before one knows it cause a great deal of worry. Use Orange Flower Skin Food rubbing it in well every night after the face



THE BRIDE'S TOILET.

No occasion in a woman's life usually calls for such care in her toilet as her wedding. Usually the preparations for it are made under the eyes of all the female relatives, and even the small boy and prospective bridegroom are not always excluded. Russia is no exception to the rule.



GLORY OF THE COMING WOMAN.

"The crown of woman's glory is her hair."—trite and true, indeed! This young girl has been richly endowed with this necessary feature of a beautiful woman. She will be much interested in the instructions given of "How to Care for the Hair."

has been bathed with warm water, white castile soap and a complexion brush. The food will build up depleted tissue and will put new life generally into the complexion. Every morning dash on cold salt water. This will not only wash away sleep and give you a fine color, but it will make you smile instead of frown.

Lotion for Weak, Tired or Inflamed Eyes.—Fifteen drops of spirits of camphor, one teaspoonful of powdered boric acid, two-thirds of a cup of boiling water. Strain through muslin, cool, and apply twice a day.

Eyelashes—How to Help Growth.—Touch the lashes with a little castor or olive oil every night on retiring.

Eyebrows—Care of Same.—These should be brushed with a small stiff, firm brush daily, which will cleanse and invigorate them. Don't pencil your eyebrows. This soon makes them fall out. To increase the growth use cocoanut or olive oil. To darken them use sage tea, with a few drops of alcohol.

CARE OF THE MOUTH

How to Cure a Bad Breath.—An offensive breath is a real misfortune, and one against which you should begin a crusade without delay. Have your teeth looked over by a dentist, for a slight cavity might cause all the trouble. Keep the digestion in first-class condition. Use this mouth wash: Salol, thirty-seven grains; alcohol, eight ounces; solution of cochineal, two drachms; oil of rose, four drops; oil of peppermint, seven drops. Dissolve the salol in the alcohol, add the remaining ingredients, and filter. A few drops to half a glass of water.

Tooth Paste.—A pleasant tooth paste is made as follows: Seven ounces of precipitated chalk, seven ounces of powdered castile soap, two and one-half ounces of powdered orris, one-half drachm of oil of peppermint, one-fourth drachm of oil of cinnamon, glycerine sufficient to form a paste.

Tooth Powder.—Precipitated chalk, four ounces; pulverized borax, two ounces; powdered myrrh, one ounce; pulverized orris, one ounce. Mix and sift through fine bolting cloth.

How to Keep the Gums Healthy.—A very simple way to keep the gums healthy is to rub them daily with lemon juice.

HOW TO CARE FOR THE HAIR

The fact that a woman has pretty hair goes far toward balancing any other defects she may have. Her "crown of glory," if it is full and brilliant, will mark her at once and make her good to look upon. The care of the hair is very simple, but if you would have a beautiful, luxuriant head of hair it must be taken care of regularly and systematically. Nature itself will do more in a short space of time, if given the proper assistance, than all the so-called hair restorers can ever accomplish. If you wish to have nice, long, fluffy tresses you will have but to follow the instructions given in this chapter

In starting out it is assumed that our readers are not expert hair dressers, but mainly women in their homes who can neither find time nor bear the expense of patronizing a reliable hair-dressing establishment.

Massaging the Scalp.—In the ordinary care of the hair the first thing to be attended to is massaging the scalp. The reader will distinctly understand that this does not mean massaging the hair. There is no occasion for tangling up your lovely silken locks when you are only massaging the scalp. To do this massaging all that you require is your hands. Run your fingers carefully along your scalp and then rub them back and forth for about half an inch, being careful when you have massaged that particular part to withdraw your hands to work upon another place. Massaging is simply rubbing the scalp all over with the tips of your fingers. Be careful not to scratch with your nails.

Washing the Hair.—The washing of the hair depends entirely upon the constitution of the individual, for example:

1. For the one who is stout and who perspires easily the most careful attention to the hair is required. She should wash her scalp at least once a week according to the directions to be found at the end of this chapter, and should do it as soon after being in a perspiration as possible.

2. The thin girl should wash her hair not oftener than every two weeks, unless during that time she has been in a great perspiration. In that event it should be washed as soon afterward as possible.

3. The medium lady should wash her hair on an average every ten days, certainly not less than every two weeks, the time to be deter-

mined by the nature of her employment. To make hair grow and keep it in a healthy state it should be washed as often as we have mentioned.

Proper Kind of Soap for the Hair.—It is given out as an absolute fact that women buy soap according to the perfume it gives out, or the color and attractiveness of the paper in which it is wrapped. It is reported that one of the salesladies in a large store kept track of the kind of soap sold to men and women for one month. Nine out of every ten women looked at the soap in fancy wrappers, took it and smelt it and bought it without any question; while nine out of ten men asked for a pure vegetable and oil soap without any reference to the odor or fancy wrapper. It must be claimed that in this instance the men showed their common sense. A piece of good, pure vegetable and oil soap, with or without any odor, is what should be used by everyone.

Combing the Hair.—In combing the hair use a good coarse comb, taking care that all of the teeth are smooth and firm, so that they will not tear or split the hair. Never use a fine-comb. It irritates the scalp, injures the roots and causes dandruff.

Use of the Curling-Iron.—As to the curling-iron it has ruined many beautiful heads of hair. If the iron is used carefully and at the proper heat the hair is not injured, but if the iron is too hot it burns the life out of the hair and its brilliancy is gone. If the curling-iron is too hot stop using it or wrap soft paper around it. This is an old-fashioned custom, but by doing this one is pretty sure not to suffer from burning the hair.

Brushing the Hair.—As to brushing the hair this is usually overdone by ninety-nine out of every hundred women. The hair, of course, should be brushed, but a dozen or two strokes each night will remove the dust that has collected during the day and clean out any dandruff that may have been thrown off by the scalp. Brush the hair firmly and gently, but not violently.

Dandruff.—A healthy scalp throws off continually a certain amount of dandruff. It is simply a natural separation of the scales or outer skin and the dirt or dust that has collected on the scalp. When the pores of the scalp are in a perfectly healthy condition they throw off a certain amount of matter, which, because it is held on the scalp by the hair, settles into little scales or flakes. This is commonly known

as dandruff. No matter how many times the scalp is washed it still collects.

For the cure of excessive dandruff the following directions are given: Shampoo the hair once a week with six or seven eggs and plenty of hot water. Rinse well, dry the scalp quickly and follow with a vigorous massage with the finger tips. Every night apply this tonic: Forty-eight grains of resorcin, one-fourth ounce of glycerine, diluted alcohol to fill a two-ounce bottle. Put on with a medicine dropper and rub in well. Never remove dandruff with a fine-comb. The process irritates the scalp and aggravates the trouble.

Dead Hair.—When you start to massage your scalp you need not be surprised if on combing it you take out what you consider to be good hair. As a matter of fact these are dead hairs, and in removing them you add so much more life to the hair that is left. This process is like the pruning of dead branches from trees in order to give strength to the living parts. If the roots of the hair are alive new hair will take the place of the dead which has been removed by massaging the scalp.

The ends of the hair should be watched carefully. When they commence to split and roughen they should be twisted into little rolls and the ends singed. This will have the effect of bringing all to an even length, besides making the hair more healthy.

How to Wash the Hair.—Begin by using warm water and pure vegetable soap. Rub the soap on the hands until you have a good lather, then rub this into the scalp. Do not rub the soap on the scalp. After washing the scalp thoroughly rinse it off first with warm and then with cold water. Follow this with both warm and cold water applications. These are the most valuable tonics that have ever been discovered for the hair and scalp. In making these applications use water as hot and as cold as you can stand it, for this invigorates the hair and accelerates the circulation of the blood around the scalp. In some hair-dressing parlors this is done by soaking a towel in hot or cold water and laying it on the head. This process prevents getting all the hair saturated. If after washing the hair you find a white sticky substance clinging to the teeth of the comb it should be washed over again until every suggestion of matter is removed. Dry the hair with warm towels. After you have dried it then is the time to give it a thorough massaging. If the hair becomes too dry a very

little olive oil should be used. But the writer wishes it distinctly understood that except in very rare cases, like the above, oil should never be used on the hair. When drying the hair do so in the sun if possible. Never begin combing the hair until it is almost dry. Blonde hair should be washed with the yolk of an egg. This will help to maintain its golden tints. Mix the egg with a pinch of borax and a pint of warm water.

Hair Dyes.—Unfortunately some women try to cheat old Father Time by coloring their hair. This is a very dangerous practice. Wholesome food, exercise and proper care of the scalp will do more to keep away gray hair than all the lotions that ever were made.

If you would keep your hair right you must keep yourself right, both mentally and physically. Unhappiness, sorrow, or some other severe harrowing shock can be told almost immediately by the hair. It has lost its luster. If the body is kept strong the hair will take care of itself.

Dressing the Hair.—Nearly all women should dress their hair differently, and dress becomingly, irrespective of style. It is a fact that to nearly all women the plainer their mode of hair-dressing the more becoming it is. This does not mean that you are to comb your hair straight back and roll it in one lump; comb it back if you desire, but have the coil smooth and graceful. It is bad for the hair to be tightly pulled back, or to be closely arranged. The scalp requires ventilation. This should be remembered whenever arranging the hair. The one thing to remember is that the lines of proportion of the face should be the guide, and the hair dressed in such a way as to lessen and not exaggerate these lines of proportion. Watch your defects and remember that what is becoming to one woman may be dismally inappropriate for you. For instance, if one has a heavy chin, a few little puffs and a fluffy fringe left lying out over the ears will add grace and lighten the heaviness of the lower part of the face. A woman with a sharp chin should arrange her hair close to the sides of her head with a coil on top. Watch the paper for every new fashion. Get before a looking-glass and try it on yourself. It may be just what you have long been waiting for. Sometimes you can adopt only a part of that style, but do not be afraid to do so if it is becoming.

Egg Shampoo for the Hair.—If you rinse your hair well after the egg shampoo there will be absolutely no odor adhering to the silky strands. Soap is not necessary at all; the eggs will make a fine, lively suds. Use seven or eight eggs—even more if the hair is heavy. Fill a wash-bowl with very hot water. Hold the head over the bowl and rub in part of the eggs; scrub and rinse thoroughly. Use the rest of the eggs, dig your fingers into the scalp vigorously and continue until you feel perfectly clean. Finish with a bath-spray rinsing. It is the only way.

For Teachers Who Get Chalk Dust in the Hair.—Chalk dust, to which all teachers are subjected more or less, is extremely trying to even the healthiest hair. It dries the oily secretions of the scalp and gradually deadens the growth. The remedy is in applying something to take the place of the oil. Try this tonic, applying with a medicine dropper every night and rubbing in with the finger tips: Forty-eight grains of resorcin, one-fourth ounce of glycerine, diluted alcohol to fill a two-ounce bottle.

Another Hair Tonic.—A simple and very effective hair tonic is made by combining one-half drachm of bisulphate of quinine, one-half ounce of salt, three-fourths of an ounce of borax and one pint of water. A suggestion of perfume will make you like it better. Apply every night with a soft sponge.

HANDS AND THEIR CARE

There are few minor things more unpleasant, either for the sufferer or for the casual observer, than ill-kept, red and roughened hands. Skin that easily chaps requires oil, and so do nails that split and crack. The best sort of soap for such skin is that which contains the most oil, the best sort of treatment for such nails is to rub them well with a cold cream mixture after washing them at night. Very hot or cold water is bad for the skin. It is also a poor policy to surprise your hands by putting them first into hot water and then into cold, or vice versa. A little powdered borax added to the water will soften it and have a beneficial effect. Corn-meal is also a simple but good addition to the toilet table, and should be used as a preventive and as a cure for chapped hands. Use a fine soap and tepid water in washing the hands, and before rinsing off the soap rub them well with the meal; rinse them with tepid water, using a little meal each

time except the last. Dry the skin thoroughly and then rinse it again in a little water containing a teaspoonful of pure glycerine. The word pure is important in this connection, since impure glycerine is anything but healing. Pure glycerine rubbed on the hands is quite lacking in odor. Glycerine, by the way, should never be applied to the skin undiluted. It has a strong affinity for water, and will absorb all the moisture from the surface which it touches unless it has been first mixed with an equal bulk of water. Rose water, lemon juice and glycerine make an excellent combination for softening and preserving the skin.

How to Clean Hands after Dirty Work.—Before blacking the stove it is well to "lard" the finger-nails, both around and under, then draw on an old pair of gloves. Make an emulsion of powdered borax and white castile soap, melted in a small quantity of water, and into this stir a little kerosene. After doing a dirty piece of work use this emulsion when washing the hands, and then rinse them with vinegar. The soap and kerosene open the pores and let the dirt out easily, and the vinegar closes them and coats them over, thus preventing them from becoming chapped and roughened. The lard prevents the nails from becoming stained, and also helps to prevent hang-nails.

How to Make a Simple Toilet Cream.—Here is a very simple toilet cream to be used at night. It consists of glycerine and bay rum in equal parts, to which is added as much tincture of benzoin as it will take without curdling. This is easily made and not expensive, and it does not soil the bedding, while it does keep the hands in good condition. If one cannot use glycerine, which irritates some hands, strained honey may be substituted; but only a small quantity of this should be prepared at a time, for it does not keep well.

How to Take Stains from the Hands.—Lemon and salt will remove stains from the hands.

Cracked Hands Healed with Copal Varnish.—Men and women troubled with cracked hands, particularly in the winter, often find it very hard to heal the cracks. Common copal varnish will heal them completely in two or three days, and a small bottleful will last for a long time.

Glycerine for the Hands.—To preserve the smoothness and softness of the hands keep a small bottle of glycerine near the place where you habitually wash them, and whenever you have finished washing, and before wiping them, put one or two drops of the glycerine on the wet

palm and rub the hands thoroughly with it as if it were soap, then dry lightly with a towel. Household work and bad weather will not prevent your skin from being smooth and soft if this plan of using glycerine is followed.

How to Reduce Fat Hands.—Long, slender hands are very pretty, but when you happen to have chubby, fat ones, there's not much to be done in the way of a reform. Delsarte may accomplish something by making the muscles firm. Stretch the fingers to the limit; then with muscular force close the hands slowly. Do this many times, night and morning.

To Keep the Finger-nails Nice.—One does not have to be particularly talented to be able to keep one's finger-nails all nice and shiny-like. Every morning when bathing the hands use warm water, castile soap and a good brush. After drying, lift up the cuticle about the nails with an orange-wood stick, cleansing the nails, and fluffing away hang-nails. File, if necessary, touch the nails with vaseline, and then polish with a chamois-skin buffer and nail powder. Vaseline is better than red nail paste. Never use scissors for trimming the nails or cutting the cuticle.

Cosmetic Jelly Good for Hands.—Cosmetic jelly is just as delightful when used as a facial application as it is to keep one's hands in prime condition. The recipe is as follows: Seven ounces of rosewater, thirty grains of gum tragacanth, one ounce of alcohol, one ounce of glycerine. Let the tragacanth stand in the rosewater for four days, beating often with a wooden spoon. When the gum has entirely dissolved, add the glycerine, then the alcohol. A few drops of oil of rose and half a teaspoonful of powdered borax are improvements. This lotion dries immediately after application.

To Stop Nail Biting.—When the impulse to nibble your finger tips seizes you, at once prepare a bath of hot water and a bar of soap. The bath will soothe the sensitive nerves of the hands.

Lotion for Chapped Hands.—Chapped hands are usually caused by hard water, impure soaps and exposure to our irritating winds. When bathing, soften the water with a teaspoonful of this lotion: Four ounces of alcohol, one-half ounce of ammonia and one drachm of oil of lavender. Use pure white castile soap, getting the real imported kind. Rinse all the soap away and dry well. Then apply cosmetic jelly.

CARE OF THE FEET

No one can be perfectly happy if the feet pain or are sore. Neither men nor women should ever be conscious of the fact that they have feet, and constant attention is necessary to preserve or keep them in a healthy condition. Of course, the first consideration is the kind of shoes to wear. These should not only be perfect in fit, but easy and comfortable. Shoes are an expensive item in a woman's wardrobe, but it is better to economize in some other direction and have a well-made, properly-formed boot.

To keep the feet in prime condition, clean hose should be worn each day, and the shoes changed as frequently as time, money and circumstances will permit. The heavy shoes worn for walking should be taken off as soon as the house is entered. If it is necessary for a man or woman to wear heavy shoes the greater part of the time, then two, or even three, pairs should be owned. In this way the feet are kept from becoming tired.

After the daily bath, and it is an excellent thing to have this warm, as far as the feet are concerned, it is well to rub into the skin of the foot a small quantity of carbolated vaseline. This should be rubbed in hard, and particular attention paid to the callous spots and to the toe joints. When there are hard, calloused spots these should be rubbed away with a bit of pumice stone. This may be easily done when they are softened by the warm water. Nothing is better for enlarged or inflamed joints than to paint them daily with iodine. In a short time they will become normal and natural. Weekly attention should also be given to the nails. These should never be permitted to extend beyond the length of the toe.

THE FORM AND HOW TO PERFECT IT

Physical Culture and Delsarte.—A regular course of physical culture is a good thing for any woman, whether she be thin or fat. To any woman who would have a round, supple waist, small hips and a fine bust, there is nothing better than a thorough course of Delsarte and deep breathing methods.

Form Development.—The figure can be developed by any healthy woman who will use her lungs. Plenty of women follow the canary-bird method of breathing. That isn't the way. Let the good fresh air trickle through all the lung cells, and wander around for a while,

Breathing exercises night and morning count for something, of course, but to have a high, fine, firm chest and nice, round figure one should breathe correctly all the time. Hold the chest up, chin in, have the hips back and the hands at the waist. Then breathe deeply, inhaling and exhaling very slowly.

To develop the form also massage every night with a mixture of one-half ounce of cocoa butter and two ounces of lanolin. Next morning take a cold salt water bath, and then rub well with alcohol.

Walking and Its Effects.—When walking one should hold the chest up, the chin in and the hips back. When lifting the feet don't show the soles of your boots. It is a question whether or not walking develops the hips. At all events if you enjoy long walks take them by all means. For there is nothing like crisp winds to bring contentment of the heart and a feeling of charity for one's fellow beings. Walking in the open air certainly helps one's digestion, and any human mortal with a good digestion has no excuse for being either irritable or unkind.

How to Increase Your Weight.—Plenty of women are cross and fussy because they don't get enough to eat, or take enough time in which to eat it. To these we suggest regular doses of olive oil, which is very fattening. Take a dessert spoonful of the oil just before each meal, adding a wine glassful of grape juice or Burgundy. A raw egg taken at night is also a good flesh producer. Break the egg in a large spoon, add a dash of pepper, salt and lemon juice, and take it.

RULES FOR THE REDUCTION OF FLESH

Food to Eat.—Avoid all starchy and sweetened food, all cereals, vegetables containing sugar or starch, such as peas, beans, corn, potatoes, etc. Have your bread toasted; sprinkle it with salt instead of butter. Milk, we regret to say, if it be pure and good, is fattening. Hot water is an excellent substitute for other liquids. Add a little of the juice of limes or lemons to it if you choose. Limit your sleeping hours to seven at the outside. No naps. You must take exercise.

Exercise to Take.—If you cannot walk at least five miles a day, and do not wheel, go to one of the institutions where mechanical massage is given. The system is thoroughly wholesome and not expensive. In reducing flesh the one fact to recollect is that fat is carbon—oxygen destroys or burns out carbon. You must consume the carbon

by the oxygen you take through your lungs. The more exercise the more oxygen and consequent destruction of fat by the one healthful method of curing obesity. The more starch and sugar you eat the more carbon there is to burn away.

To Reduce Hips and Abdomen.—A simple exercise which will do away with about two inches of hip measurement every month is this: Place the heels together, chest up, chin in, hips back. Take a long breath and bring the hands above the head slowly, then down to the floor without bending the knees.

Another exercise which is excellent for reducing the size of an extra large abdomen is this: Place the hands on the hips, filling the lungs completely, and exhaling slowly. While exhaling, twist the body at the waist line, first to the right and then to the left. Get out of doors all you can and take long walks.

The Double Chin and How to Reduce It.—Treatment for double chin: Anoint with Orange Flower Skin Food, and, picking up the flesh between the thumb and the first finger, roll firmly. This dissolves the tiny fat cells. Afterward give long, even strokes with the flattened palms from the chin up to the ears. Bathe with cold salt water twice a day.

SUGGESTIONS ON PERSONAL HYGIENE

Cucumber Peelings, boiled in water, will be found good for the skin. A slice of cucumber may be rubbed on the face instead of soap. Lemon juice will remove sunburn. Dill water is as good for the complexion as rose water, though it makes the skin paler.

Elderflower Water is famous for its cooling properties, as is lavender water.

Never Go Out in Blustery Weather without a Veil, unless you wish a tanned skin or freckles.

Do Not Forget, When Drying the Face after washing, to rub upward toward the nose. This will prevent wrinkles, and will help to smooth out to a great extent the creases alongside the nose.

Use Neither Hot Nor Cold Water Exclusively for bathing. A good rule to follow is a hot bath at night and a cold one in the morning; but be sure to take a bath daily if you wish to keep your skin in good condition.

Shoes and Gloves.—Do not wear tight shoes if you desire a graceful

carriage; no woman can walk comfortably or well in shoes that are too small for her feet. Do not wear too small gloves.

Avoid Tight Lacing and any form of dressing which compresses any organ of the body.

To Bleach and Soften the Skin.—A little diluted lemon juice rubbed on the face, neck or hands at bedtime will both bleach and soften the skin.

Advice to Coffee Drinkers.—A physician advises patients who are affected by coffee to give it up gradually and not all at once. He asserts that the cream in the coffee is often the source of trouble, and recommends hot or condensed milk to be used in the coffee instead.

The Use of Vaseline by Women.—Vaseline is not a desirable adjunct of the toilet table. It will make hair grow on one's face where it shouldn't, and it won't make hair grow on one's head where it should. Some of the cheaper cold creams are compounded of white vaseline, and, for that reason, should be religiously avoided.

A Home-made Bath Cabinet.—A bath cabinet is a fine thing in case of illness. It is made with a square frame large enough to enclose a grown person when sitting on an ordinary chair. This frame is covered with canvas, tightly stretched and closely tacked in place, and there are hinges so that it may be folded up when not in use. The top also is covered with the canvas, through which a hole is cut to allow the head to project. When children are put into the cabinet a footstool on the chair raises them to the proper height. A little oil stove is placed in the cabinet and lighted, and a teakettle full of water boiling upon it soon induces a perspiration equal to that produced by the finest Turkish bath that was ever given. This is followed by an alcohol rub, or a sponge bath of cool water and salt, or other treatment, to meet the case. Be careful to keep the head cool by means of cold applications while in the cabinet. There is nothing more restful after a hard day's work than a three-minute sweat in this cabinet, followed by a cool sponge bath and a brisk rub with a coarse towel.

Soft Water and the Bath.—If you read carefully the history of famous beauties who won scepters and swayed kingdoms by the power of their physical perfections, you will see that the beauty of the body can be increased by means of the bath. In these days of

bathing one of the important things to know is that hard water is fatal to the beauty and smoothness of the skin or complexion.

The beauties who are careful of their complexions avoid hard water as they would a pestilence. They use powdered borax in their bath, even with rain water, and if there is any doubt about obtaining it they carry it with them. In sleeping cars they use it, and in their daily bath they consider it a necessity. The Romans believed in using oils, and after the rain water bath they added all kinds of essence and perfumes to impart a beauty to the skin and a fragrant charm to the body. They also believed in massaging and rubbing after their bath, and they used cocoanut oil when the skin had the least tendency to dryness or irritation. Many recommend salt baths when anyone is weak or ailing, and easily fatigued. The time of bathing should be considered, also the point not to take a bath soon after eating. To break the latter rule of health interferes with the digestion by causing the blood to leave the internal organs. Just before retiring at night is the best time for a warm bath, and the early morning for a cold bath. Bathing, properly conducted, is a beautifier, and borax is excellent; being a purifier, it cools the blood and allays irritation of the skin.

Uses of the Lemon in the Toilet.—A lemon is one of the most useful adjuncts to the toilet. It is especially helpful in removing stains from the skin. When the juice of a lemon has been used in the kitchen the "husk" of the fruit, in which a little pulp and juice will remain, should be reserved for the wash-stand. It is useful in its fresh form for rubbing over the hands and cleaning the flesh that surrounds the nails; or can be steeped in boiling water. When cold, this water should be used for bathing the face. If the "husk" of the lemon is dipped in borax before being rubbed over the hands so much the better. A mixture of lemon juice and borax is recommended for whitening the skin.

CHAPTER XIII

THE FARM

Hygienic Points—Keeping Accounts—Fencing and Care of Machinery—Wood, Water and Ice—Pumping and Irrigation—How to Fertilize the Farm—Electricity as a Stimulant—Rotation of Crops—The Grass Crop—Hay Making and Measuring—Corn—Building Silos—Smutty Grain—Bird and Insect Pests, etc.

False economy is the bane of some farmers. To save a dollar or a fraction thereof they pay little attention to hygiene, allow their harness to go unoiled, and their farming implements and vehicles unpainted, work with old, dull or out-of-date tools, buy cheap goods of all kinds and overwork themselves, family and stock. They let the old fence "do" another year and never grade up the stock or fowls. Result: Harness wears out in half the time that the well-kept harness does, and the same may be said of implements and vehicles. A neighbor does twice the amount of work with half the exertion with his improved tools and systematic account-keeping, while his children attend school and his wife rests. The cheap goods of the false economist wear out soon and never look well, his stock retrogrades and becomes unsalable, and he never "knows where he stands." He is like the man who jumped the fence to save the wear on the gate hinges, and broke his leg jumping. In order to prosper in these days the farmer, like all other producers, must be up-to-date and especially keep in close touch with the rest of the world.

KEEPING ACCOUNTS

Every farmer, no matter how small his business, should keep some account thereof, that he may know how he stands with mankind, as well as whether he is farming at a profit or a loss. Many imagine that because they do not understand bookkeeping it is out of their power to do this. That is a very mistaken idea, however, as any one who can write, though possessing but a smattering of figures,

can successfully do so as follows: Procure a good-sized blank book with substantial covers, that will hold the accounts for years; also a small pocket note-book. At the top of left-hand page, in larger book, write in bold letters: "Amount spent in 1900." At top of page opposite write: "Amount sold in 1900." At least once per day set down in this book every cent spent, as well as every cent coming in from sales, stating what for; as, mending wagon, \$1.25; shoeing horse, 75 cents; eight dozen eggs, \$1; twenty bushels potatoes, \$10, etc. No names or dates are absolutely necessary. At end of month add up each page, when you can tell at a glance whether the farm is paying or not.

Now for the small pocket note-book. If doing a regular business with a firm, say Smith & Son, place their name at the top of two pages, a left-hand page and a right-hand page. Before the name on the left, place the word "owing." After the name on the right, place the words "owing me." Now, remember, everything set down in both books on a left-hand page represents money that has left you, while every item set down on a right-hand page is money that flows the right way so far as you are concerned. Very good. Now our pages will read: "*Owing* Smith & Son," and "Smith & Son *Owing me*." This book represents your day-book and ledger combined. Everything bought of Smith & Son on credit should be set down on the left with date, as Jan. 2, shoes, \$2.50; Feb. 11, 100 pounds sugar, \$5.60; while each item sold to Smith & Son, on-time, should be set on the right-hand page opposite, as Jan. 18, 41 bushels wheat, at 70 cents, \$28.70; March 12, 16 pounds butter, \$4, etc. No cash transactions should be set in this book. By these simple methods any person of ordinary intelligence can successfully keep his accounts so that he will know at any time the exact condition of his farming as a financial enterprise.

In many farmers' families growing boys or girls would take delight in keeping such records, and would thus prove not only a help to their parents but would be taught business methods themselves.

TELEPHONE LINES FOR FARMERS

By such means as the telephone, good roads, country trolley lines, or something else, we must seek to break the necessary isolation and

sometimes monotony of farm life. The cheapest and easiest gotten of these is the first named—the telephone. Of course the telephone cannot transport one bodily into the home of a neighbor, but it can at least enable him to enter it for conversational purposes and return in the twinkling of an eye. A very good instrument may now be gotten for \$12. Line costs about \$30 per mile if cedar poles are used, and if oak poles are substituted for cedar it may, in most sections, be built still cheaper.

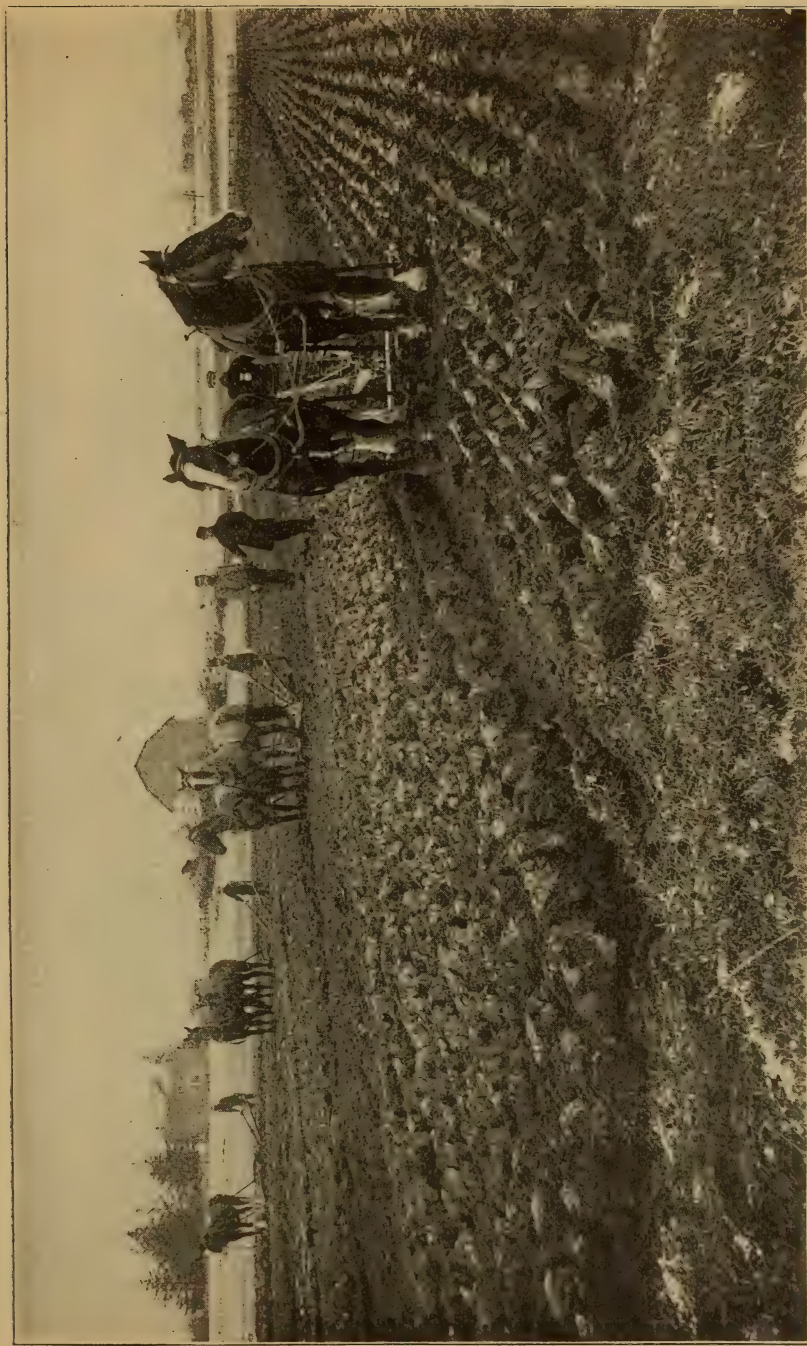
"In this section there are two farmers' party lines," writes M. L. Carr, of Avon, Illinois. "The termini of both lines are towns, and regular message rates are fixed for those outsiders who wish to transact business over the wire. On one line there are thirteen 'phones, and on the other fourteen.

"The writer recently has been experimenting with barb wire on the fences as a means of telephonic communication. A line two miles in length works successfully, and I have every reason to believe that a much longer one would work equally well. Wet weather affects the working of such a line somewhat, but not enough to make it impossible to carry on conversation. The wire was allowed to remain just as we found it, excepting that we stapled it again if it was loose, and bridged over splices with No. 12 plain wire. The ordinary splice in barb wire is not a very good joint, electrically, and to make it such a short piece of wire was wrapped tightly around each side of the splice. Where it was necessary to cross roads, or pass over gates, poles were planted on each side and No. 12 wire strung on them and brought down to the fence wire on each side. This furnishes a very cheap form of line, and a very satisfactory one, too, in dry weather.

"The man who never has used a telephone cannot see what use he could possibly make of it excepting, perhaps, in case of sickness. One of the many uses to which it is put here is to get a daily market report. At 12 o'clock the farmer subscriber knows the day's receipts at the Chicago stockyards and the condition of the market for that day. This is only one of the many uses to which it is put."

FURNISH THE HIRED MEN WITH GOOD FARM READING

"I went out last fall to a farm near this city to work for a farmer who had several hired men," says a friend. "In the evening two or



PLOWING MATCH NEAR FORT WAYNE, INDIANA.

The above is a scene familiar to many farmers both East and West. The contest will, of course, be decided not only by the amount of ground plowed over in a given time, but by the regularity of the furrows. Other more delicate points are doubtless being discussed by the two judges in the center of the picture.

Courtesy of Breder's Gazette



Courtesy of the Breeder's Gazette

CORN-PLANT ABOVE AND BELOW GROUND.

The above illustration shows the way in which the corn-plant is anchored in the soil and secures its nourishment from it. It indicates its appearance twenty-one days after planting, the surface roots being largely the food roots, and the deep roots affording anchorage.



Courtesy of the Breeder's Gazette

ROOT DEVELOPMENT OF MATURE CORN-PLANT.

This picture shows the appearance of the roots of the mature plant and explains how deep cultivation of the soil is a cause of much injury to the growing crops. The roots are cut off, and experiments at the Illinois Station have proven that the yield is thereby materially decreased. Shallow and frequent cultivation is recommended.

three of them, after eating supper, would go to town to a dance or theater. They returned usually about one or two o'clock in the morning, and the result was that none of them were fit for a good day's work. I wondered why it was that they left every evening and cared more for sport than quiet hours at their rooms. I learned that the farmer by whom they were employed had no papers in his home, no magazines, or other reading matter. As a rule anybody who can read will read. For this reason there ought to be several good papers and good books in the farm home. The hired men will be enlightened and mentally improved even by the occasional reading of good farm literature, and the price paid for it will in this way be repaid to the farm owner. Subscribe for a class of good farm papers, and the hired men will stay at home evenings and you will get your money's worth a dozen times over before the year is out."

FARM HYGIENE AND COMMON DIRT

We are very scientific in these days and talk of bacteria, bacilli, micrococcus, pasteurizing, sterilizing, etc., and there is danger that we shall forget that scientific dirt is just as bad as the common variety. Dirt under a Latin name is just as dirty as it is in English, and requires just as much soap and hot water, scrubbing-brush and elbow grease, as the old variety that our fathers used to wrestle with before the days of washing powders and concentrated lye.

We need no special sterilizers or pasteurizers to keep the milk cans clean; leave all these complicated machines to the scientific fellows and go at the cans and dairy vessels in the old-fashioned way as if bacteria and bacilli had never been heard of; use plenty of water, soda, sunshine and fresh air. Have your milk vessels clean first and think of the bacteria afterward. If your butter or cream are off-flavor, nine times out of ten the trouble is that your stable, cow or dairy is dirty—has just plain dirt that doesn't need a microscope and a chemist to find; only a thorough cleaning and the trouble will vanish. The tenth time you may need the help of the expert, but don't ask for it till you have got rid of the common dirt; then you may look for the scientific variety.

Keep Your Cistern Clean.—A great many diseases with which people on the farm become afflicted have their origin in the cistern. "I have

demonstrated this to my own satisfaction a number of times," declares a careful farmer. "Nothing is more detrimental to good health than impure, foul water that is teeming with microbes of every tribe imaginable. And how do these microbes get into the cisterns? They breed in the water and multiply at a very rapid rate if the cisterns are not cleaned out at least once a year. I clean out ours every fall, and you would be surprised to see the amount of trash, leaves, etc., that comes up from the bottom. And I remember once getting out a big rat that was very offensive. We had been drinking water contaminated by a rotten rat! Health to me is vastly more than wealth, and while we are very busy and engaged in money-getting we take time to purge our drinking water. That must be pure and wholesome else trouble begins."

Handy Filter for Farm Use.—A convenient filter which may be made by anyone will be of value in purifying water for cattle drinking in times of drouth. Take a large sized cask and perforate the bottom with a number of gimlet holes. Put over the bottom first a layer of clean pebbles, next well washed sand, then a layer of coarsely pounded charcoal and over all this a piece of canvas. Water which is quite muddy may be poured into this filter, and, draining through it into a tank prepared for the purpose, will be good for cattle drinking even though it is not quite clear.

FARM FENCING

To a considerable extent poor fences are an index of a poor, slovenly farmer, while good fences betoken thrift and enterprise. The strength of a fence built to restrain stock is only the strength of its weakest part. Whatever fences are needed should be strong and well built throughout.

On this account in a majority of cases it will be found a good plan to go over them carefully and repair wherever necessary. Usually in early spring, when there are days during which the soil is too wet to plow or cultivate, a good work may be done in putting the fences in thorough repair, so that throughout the season the stock may be considered safe. When the fences are not in good repair there is not only to be considered the loss of what the stock will eat and destroy, but the risk to the stock themselves, and this latter is often no inconsiderable item. If animals occasionally break through weak

places in the fence they very soon acquire the habit of trying to find those weak spots.

On many farms there is too much fencing. It is built in a way that takes up entirely too much land. Generally fence rows not only grow weeds to seed the rest of the farm, but they afford a harboring place during the winter for insect pests and vermin that injure the growing crops. There are few farms where some fencing is not necessary, but in many cases a little care in planning the farm would dispense with a considerable amount.

On very many of our farms, particularly in the East, there are far too many rods of fence. Instead of having large fields there are many instances where land is cut up into two or four or five acre fields. To fence these small fields costs too much to make it a profitable investment. Not only the first cost is great, but the annual repairs are quite a tax. "I have adopted the plan of having just as few fences as possible," writes a New York farmer. "Years ago on my farm there were many rods of worn rail fence. This took up so much land and so much brush grew in the corners that it was torn down and rebuilt in a straight line by using posts and cleats. I have also built considerable board fence, wire fence, stump fence and a combination of pickets and wire. The stump fence, with stones nicely piled in between the stumps, makes a very substantial fence and one that will turn any kind of stock, and on the whole is the most satisfactory kind on my farm. The combined wire and picket fence comes next. This latter we build with a machine where it is to stand, and the pickets are split out of chestnut, oak, ash or similar durable material when we are cutting up our wood pile. This is a fence that occupies but little room, looks well and stops anything from a pig to a horse.

"I have no barbed wire fence on the farm and do not want any. In building wire fence I use the plain twisted wire, and find it effectual in stopping both cattle and sheep. Board fences are too expensive, and when wire can be bought at present prices no farmer can afford to build them.

"Again, do not allow brush and weeds to grow along the fences. They look far from neat, and besides afford a harbor for woodchucks, rabbits and other pestiferous animals, much to the detriment of the crops."

CARE OF FARM MACHINERY

The cost of the machinery that goes to waste by standing out of doors from one year to another would more than build sheds to cover all the machinery in the country. Why is it that so many seemingly well-to-do farmers will get a new machine and use it the first year and then drive in a fence corner or under the nearest tree, unhitch and leave it there until it is needed again, when they would little think of taking money and laying it down that way, although the machine cost the money just the same? When this machine is wanted next year the paint is all off, the woodwork is sun-cracked and twisted out of shape, and beginning to rot where bolts are through it, the iron work is rusty and the whole machine is out of order. Such machinery is ruined more by the abuse and neglect it receives than by the work it does; and the free use of oil when using machinery is of much more importance than a great many people think.

Petrolatum for Farm Tools, Machinery, etc.—Petrolatum is a by-product gained in refining petroleum or coal oil. It is put on the market under hundreds of different names, such as cosmoline, petroleum, vaseline, etc. It can be bought in all quantities from a drachm to a barrel; the larger quantity you buy the cheaper you get it. It is indestructible; throw it in the fire and you can collect it in the ashes when cool. It never becomes rancid under any temperature. Grease your agricultural tools with it when you put them away and you will find them just as bright as when you applied the petrolatum, even if they are stored for twenty years. It never dries nor becomes hard to remove. "I keep a box in the house for family use," writes Hugo Faust, of Marshall, Illinois, "and one for the horse stable, cow stable, calf house and hay press. There is nothing like it as an ointment for chapped hands and lips. When the cow's teats become lacerated or chapped from cold apply cosmoline; if a horse has an abrasion apply vaseline; if you want to drive a nail in a hard piece of wood dip the point of it in petroleum jelly; if you want to send home a screw put cosmoline on the threads and you can always take out the screw. How much trouble we sometimes have in the threads rusting on a bolt that we want to remove. Use a little petroleum. You can protect all tools, such as saw, square, chisels, bits, augers, knives and

forks by coating them with cosmoline. As a base for other ointments, such as lead, zinc, iodine, iodoform, henbane, belladonna, etc., it is good, and being neutral never becomes rancid. Keep out dirt, however. There is nothing better for lubricating bearings on mower or binder; makes an excellent wagon and buggy grease, and, last but not least, for scalds and burns, galls under the armpits, and between pedals in summer there is nothing finer. I might go on and enumerate a thousand places where it can be used to advantage.

"Take crude petroleum, which is sometimes sold as lubricating oil, and any cheap mineral paint that you can get for about four cents a pound, and make a mixture. Apply this by means of a brush of some kind to the parts of the tools which it is desired to protect. This will keep them perfectly free from rust, and they may be used the next spring without going to the trouble of scraping off the mixture with a brick or metal scraper of some kind. If tools are used shortly after the mixture is applied of course it should be applied again before they are put away."

WOOD, WATER AND ICE

Various matters connected with the clearing of land, the making of charcoal and the best means of preserving wood used in fence posts, rails, vineyards and in the farm buildings themselves are treated under this heading. We also speak of a labor-saving method of pumping water and of irrigation conducted on a moderate scale. The ice question always interests the farmer, and the suggestions on this point, as on the other matters, are offered in the interest of practical economy and convenience.

On Preserving Fence Posts, Rails, etc.—Every farmer living in wooded sections, or where rail and post fences are constructed and maintained, would welcome a practical and inexpensive means of preserving the wood and thus prolonging the usefulness of timbers exposed to the weather. Fence posts, rails, vineyard stakes and building timber, if exposed, decay in a few years, and it becomes necessary to replace them. Two methods have been practiced, having in view the preservation of the wood, but neither is satisfactory. One is to burn the end of the post that is to go into the ground until a rather thick coat of charcoal is formed. This takes out the sap or moisture and makes the surface less susceptible to the dampness of the

ground. The other method consists in dipping the ground end of the posts in kerosene until thoroughly saturated therewith.

Prof. J. C. Blair, of the Illinois Agricultural College, is conducting an experiment with regard to this matter and gratifying results are eagerly anticipated. White pine and poplar stakes, used on the experiment farm, are being treated, and the process is as follows: The wood is first heated and not treated in any way. Then the first set of eight stakes are boiled for fifteen minutes in one of the preserving solutions and allowed to cool. This is repeated and they are allowed to cool once more. The wood is next heated to the charring point, so that all moisture is driven out and the stakes are given two coats of white lead paint.

The second set go through the same operation, but are painted with barium sulphate paint. In each case the sets consist of white pine and poplar. This makes two pine and two poplar stakes boiled in the same solution and painted with white lead, and the same number painted with the barium sulphate paint. Thus at this step of the experiment it is possible to have duplicate pine stakes boiled in kerosene and treated with the paint mentioned, and four poplar stakes prepared under the same conditions. After these stakes have weathered for several years the comparative value of the preparation can be determined.

Farmers use millions of stakes every year, and the saving would be great if they could discover some combination which would make one stake last as long as two did formerly. The solution could also be applied to posts, rails and any other woods exposed to the weather.

Wood for Repairs.—"I find it a good practice to prepare some timber during winter for repairs on wagons, plows and other tools," writes Godfrey Winkler, of Southwest City, Missouri. "Only the toughest of ash, hickory and white oak should be used. I like to hew it out for the different uses and then store it in some dry, sheltered place to thoroughly season. Thus we have timber adapted for an emergency when plow-beams or other woodwork on our implements break, and it will save time in going to town in the busy time of spring or summer when work is rushing."

Killing Stumps and Hedge Fences.—The best time to cut timber so that the stumps will die quickest is in August. With large trees the

time of cutting makes very little difference, as the stumps will have to be blasted out or removed with a stump-puller.

About the only way to kill a hedge fence is to cut the hedge close to the ground, pile the brush over the stumps and burn. Then by means of stump pullers pull out all the roots possible and cultivate the ground, using a timber plow. Whenever roots are brought to the surface cut them underneath the ground, and go over the land frequently, keeping down the sprouts as they appear.

To Make Charcoal.—Cut wood into four-foot lengths; stand on end around light material and wood until there is a cord or two. Cover with leaves or straw and with an outside shell of dirt. Make draught places around the bottom. Leave a hole at the top, and down this drop live coals. When the fire is well burning within cover the hole at the top. Be careful to keep all holes, except at the bottom, closed till the wood is well charred, then uncover and pile to one side.

Corn-cobs burned in the same way are almost a necessity in the poultry yard or pig pen. Wherever pigs or chickens are kept the spring bonfires of brush and litter should be used to make charcoal by smothering the fire, and the remains saved for the runs or pens, or in the absence of live stock, for the garden beds.

Home-made Wind Engine as a Pump.—"Every farmer knows how tedious it is to pump water by hand. I was a member of that class until a year ago," writes C. D. Lyon, of Leonidas, Michigan, "when an idea struck me that I would convert some of the loose material in the way of pieces of machinery lying about the premises into a wind engine. I had an old Deering binder that had seen its best days; from it I took the reel head, to which I attached with bolts five pieces 1 by 2 inches and four feet long of seasoned oak. These arms were strengthened by five oak braces a foot from the center of the wheel. Slats a half inch thick, three inches wide and three feet long were nailed to these braces, all having the same slant. A hoop was put around the wheel and the same thoroughly braced with one-fourth inch rods, making it very rigid. The binder also furnished a bevel gear, shafting, bolts, rods, etc. A large vane was made by which the mill could be thrown in or out of gear at pleasure, and by arranging different sizes of well pipe I made a standard so the mill could turn with the wind. I placed the mill on top of one of the farm buildings, using an 8 by 8 for derrick, running from the second floor through the

roof. I then attached the main shaft (three-fourths inch) to another bevel gear, and to this the pump was attached. The mill has been in use now for about a year. I have a four-barrel tank and it is never empty. I can also connect with corn-sheller, emery wheel and turning lathe. I am proud of the mill and it shows what a man can do if he tries."

Irrigation should be recognized as an agricultural art of very wide applicability and value. Its association with the idea of desert reclamation has blinded the public mind to its value for regions where the need of reclamation does not exist. Irrigation is simply a means of soil improvement. No one questions the wisdom of the saving and storing of manures, or the wisdom of generous outlay for commercial fertilizers when required. The same is true of soil improvement by means of drainage. There should be a similar feeling in regard to irrigation, and the United States Agricultural Department is urging this fact upon farmers.

The most diligent culture and the most generous fertilization are often made of no avail, and actual loss is sometimes incurred because the farmer has not prepared himself to supply water when needed. The water, which he could often provide for a mere fraction of his expenditure for fertilizers, often for less annual cost than the interest on his investment in under-drainage, he has neglected to have ready for use, and he sees the hope of return for his year's labor and expenditure fade away during a few weeks of drouth. There have been cases where water has been stored at a considerable expense as a protection against fire in barns and has remained unused while some valuable crop was burning up in the garden. Such losses are largely due to two things: First, the notion that irrigation is of importance only in arid regions, and second, ignorance of the ease and cheapness with which a farm water supply can be stored and distributed.

Irrigation, moreover, is not merely a recourse to insure the safety of a crop. It has been demonstrated beyond question, both by practical experience and by systematic experiment, that growth and production can be profitably pushed by irrigation even when the natural moisture seems ample, and in this respect irrigation aligns itself with fertilization and cultivation as a factor in intensive culture.

Another error grows out of the large scale upon which irrigation

is generally known to be carried on, involving canals and ditches too expensive for individual undertaking, but small irrigation works usually require neither greater skill, labor nor outlay than other farm improvements which are readily undertaken. They do not require as exact engineering as under-drainage by tiling, and the whole system, both for development and storage of water, often costs much less per acre of the area irrigated than does tiling. The work is more readily comparable to the construction of open drains, coupled in some cases with reservoir building, which is no more difficult than cellar construction, and is accomplished with a similar outfit of teams, plows and scrapers. The man of ordinary skill in handling these tools, who can turn a straight furrow, or build a straight piece of fence, and can do these things well, needs only a suggestion of the feasibility of securing a home water supply for irrigation, providing his conditions are favorable.

Ice-houses for the Farm.—An ice-house on a farm does not cost much, and is of great value and service to the household. An easy way to build one is to make simply a bin of rough boards, sixteen feet square and roofed over. There should be a window in each gable, so that ventilation shall be good and the moisture rising from the ice be carried out by the wind. Put a layer of sawdust on the ground, about a foot thick, and then stack the ice snugly in the center, eighteen or twenty inches from the walls. Fill in between the ice and the walls with sawdust and cover the ice on top with that material to about the same depth. Simple as this plan is, it will keep the ice quite as well as many a more expensive double-walled ice-house.

In this line a correspondent writes: "No expensive structure is needed for an ice-house, though when it is an object to have no wasting away it should be made tighter than where this does not matter so much. Slabs from the sawmill do very nicely for the roof, and the sides may also be of rough boards. Where desired the ice-house may be one corner of the woodshed partitioned off, in which ice will keep quite as well as in a more costly structure. Even stacking is often resorted to by laying down rails for a floor, on which to stack the blocks compactly. Cover heavily with some material which is non-conducting, such as straw, hay, etc., finishing the top so as to shed rain, bracing the sides with boards and rails to keep covering in position. Care must be taken in getting at the ice,

always to open at the same place and cover up thoroughly, or some hot day will turn it to water. In putting in the ice, no matter where it may be, always surround it with non-conducting material like sawdust."

The ice-house question can be summed up as follows: Any cheap structure with good drainage and no circulation below, good ventilation above, proper space between ice and sides, filled with non-conducting material, will serve the purpose. The bugbear of expense need deter no one from storing ice. By providing a proper bottom ice can be piled on it and a building put over it later.

NO IDLE LAND

Land never should be allowed to lie idle. As an idle mind breeds mischief, so an idle plot of land breeds pests in various forms. It is not necessary that the land be planted to something with the expectation of reaping a matured crop. For instance, wheat, oats, barley, rye, besides making excellent pasturage, may be turned under and made an excellent fertilizer. Land that is intended for spring planting should have a winter crop on it. The sun and elements are not as injurious to land with a growing crop, summer or winter, as to the bare, unprotected soil. It does not wash or bake nearly so badly. After the wheat, oats, etc., are harvested break soil and plant immediately to something—peas, for instance, even if it is intended to sow to fall wheat, and the peas never mature—at all events you have a fine crop of pea vine hay, and the fertilizing value of the roots. It is much cheaper to grow fertilizer than to buy it.

HOW TO FERTILIZE THE FARM

The word "fertilizer" has a wide definition, because it really includes everything that adds to the fertility of the soil. Fertilizers may be divided into two classes—direct and indirect—or nutritive and stimulant. Direct, or nutritive fertilizers furnish the elements of plant food needed to give sustenance and vigor to the growing crops. In other words, they hold the same relation to plants that bread and meat bear to man. This class of fertilizers is of the greatest importance, and, therefore, deserves special consideration at the hands of farmers.

Direct, or Nutritive Fertilizers.—When we speak of nourishment for the

plant we refer to those elements of plant food which must be supplied to them by man. The value of these elements has been so thoroughly established, and is so well known, that to speak about them is very much like telling an old story. The elements are nitrogen, phosphoric acid and potash, and upon their proper use depends to a large extent the success or failure of the farmer's crops. These three elements of plant food can be furnished on the market in various forms. Nitrogen, for example, can be procured in the shape of nitrate of soda, sulphate of ammonia, dried blood, fish scrap, tankage and cotton seed meal. At the same time it can be supplied to the soil still more economically by the cultivation of a legume, like clover or peas, which crops possess the peculiar and distinct property of absorbing nitrogen from the atmosphere and transferring it to the soil.

The forms in which phosphoric acid is most commonly placed on the market are acid phosphate, dissolved bone, bone meal and bone black. The chief point to be borne in mind in supplying phosphoric acid is to present it to the plant in an available form, the source from which it is derived being rather of secondary importance.

Potash is supplied through the medium of potash salts, the most common of which are sulphate of potash, muriate of potash, magnesnia and kainit. All of these forms contain potash in an available condition.

It might be well to mention the fact that the best way to use the three forms of plant food referred to is to apply the phosphoric acid and potash together some weeks before planting time, and the nitrogenous matter, in case green manure is not resorted to, as top dressing after the seed is sown. The two first mentioned elements will then have had time to pass into solution.

Humus and How to Supply It.—All fertile virgin soils contain humus, that is, decayed vegetable matter, in large amounts. Some soils, such as swampy or peaty, contain this substance in excess, but as a rule no well-drained cultivated soil contains too much humus.

All kind of vegetable matter will by its decay in the soil form humus. But soft, succulent matter, like the stems of clover, vetches and cow-peas, decay sooner and more quickly form humus than woody twigs or the hard culms of rye and other grasses. When a soil becomes poor in humus the best way to restore it is to plow

under a crop of clover, vetch or cow-peas grown upon the land itself. Stable manure will also restore the humus if used in large quantities, but as a rule this will cost more than the green crop. In many localities stable manure cannot be had at any price in sufficient quantities. Rye, rape, mustard and other non-leguminous crops are often plowed under to improve worn soil. These will furnish humus, but for the purpose they are far inferior to the leguminous plants, and only the latter should be used for this purpose. Besides the humus they furnish, legumes supply the soil with nitrogen taken from the atmosphere. Rye, rape and other non-leguminous plants do not.

One ton of the following named plants dried into ordinary hay furnishes to the soil, when plowed under, the following amounts of nitrogen: Red clover, 40.5 pounds, equivalent to 250 pounds nitrate of soda; crimson clover, 41 pounds, equivalent to 260 pounds nitrate of soda; alfalfa, 43.8 pounds, equivalent to 270 pounds nitrate of soda; cow-peas, 38 pounds, equivalent to 230 pounds nitrate of soda.

In order to secure a good growth of any legume on a worn soil we must supply the soil with abundance of soluble potash, phosphoric acid and lime. A good fertilizer for any of the above crops is muriate of potash, 200 pounds; superphosphate, 300 pounds per acre. If the land lacks lime apply 500 to 1,000 pounds.

Advantages of Green Manuring.—There is one advantage in green manuring that is often lost sight of, and that is the improved mechanical condition secured. The soil is made more porous, easier mellowed and more open to the action of sun and air. To this may be added the increased supply of vegetable matter, or humus, in the soil.

Clover is one of the best crops, if not the best, that can be grown for green manuring. Yet many of our farmers are following the plan of allowing the second growth to fall down and mulch the soil during the fall and winter, plowing under in the spring. Field peas, rye, buckwheat are all good crops to grow for this purpose. When land has been cropped down so badly that it will not give a crop of clover, rye or buckwheat may be sown, and after a fair growth is obtained it may be turned under and then clover be sown. It is not best to depend upon green manuring alone to build up the fertility, but it is a help and a valuable one. All of the manure possible should also

be saved and applied. This should in fact be the first step, yet every farmer has had the experience that on the average farm it is hardly possible to secure a sufficient quantity of manure to maintain, much less build up the soil.

Stable Manure is perhaps the most important of natural manures, and possesses some excellent fertilizing qualities. It contains plant food in a readily available form, and at the same time furnishes a great deal of organic matter which greatly improves the physical condition of the soil. Stable manure will, of course, vary according to the character of the animals from which it is obtained, and the nature of the food which is fed to them. All stable manure contains potash, phosphoric acid and nitrogen, but there is an excessive amount of nitrogen as compared with the other two ingredients. This excess manifests itself by creating a heavy growth of foliage or woody matter at the expense of grain or fruit.

Farmers who have depended on stable manure exclusively for their fertilizers will no doubt have noticed this fact. The addition of a comparatively small amount of potash and phosphoric acid will greatly enhance the value of stable manure. About 150 pounds of kainit and the same amount of acid phosphate to the acre in addition to the manure as ordinarily applied would be sufficient. These materials can be used to best advantage if mixed with the manure itself, and will then not only furnish two needed elements of plant food but will also prevent the escape of ammonia from the manure, which always takes place when the latter becomes heated.

Cotton Seed Meal is another natural fertilizer, and is largely used. It is easy to handle and contains plant food in an available condition, but there is the same drawback as with the stable manure. Cotton seed meal contains about seven per cent. of nitrogen, three per cent. phosphoric acid and about one and one-half per cent. of potash. The amount of nitrogen is entirely out of all proportion to the other two ingredients; hence phosphoric acid and potash should be added to the meal, so that the plants fertilized may not run entirely to foliage or wood, which would be the result were meal alone used.

Wood Ashes should contain, on an average, about five per cent. potash and a trifle of phosphoric acid; hence where ashes are used for fertilizing, both phosphoric acid and nitrogen should be added in order to furnish enough of the three elements of plant food. Wood

ashes, however, are rather uncertain in composition and high in price, therefore, not always an economical fertilizer.

Bone Meal is rich in phosphoric acid and contains some nitrogen, although it is entirely deficient in potash. If one part of muriate of potash be added to three parts of bone meal the combination will be found excellent for fruits and vegetables of all kinds. From 600 to 800 pounds per acre of the mixture would be considered a fair application.

Using Old Bones as Fertilizers.—The question how best to dispose of old bones that not infrequently accumulate around the farm is not always easy of solution. Every intelligent tiller of the soil is aware that this usually waste material has great intrinsic value, but how successfully to utilize it is not so readily determined. Where one happens to live near a bone mill or fertilizer factory it is probably as well to have the bones ground and use them in the form of meal or exchange them for superphosphate.

With most farmers this is impractical, and so the alternative is simply to work them up at home or let them go to waste. Fortunately there are several well-tried and successful methods, involving no special skill, which under intelligent direction any ordinary farm hand can carry out, by which this valuable but inaccessible store of food can be opened up for the use of growing plants. In order to do this he must decompose the bones. This may be done in several ways. Perhaps the simplest, most effective and most economical way is as follows:

Place the bones in a wooden tank or hogshead, packing them with unleached wood ashes. Supply enough water to keep both bones and ashes thoroughly moistened, and in several months the bones will be so softened that they may be pulverized by merely shoveling them over and sifting them. With the bones and ashes both on the farm the farmer may with this simple method, and with no outlay of money, produce a considerable quantity of the very best fertilizer for some lines of vegetables.

Where one wishes to hasten the process he can use caustic lime instead of the wood ashes. This method means the outlay of some money, and the caustic lime is not easily obtainable in remote places.

A third method is to use caustic potash instead of the ashes. Like lime, this costs something. If the caustic potash be dissolved

and heated and poured while hot over the bones at the rate of one part of potash by weight to four parts of bone, it will decompose the bone so that it will be ready to use in several weeks.

If the farmer has several wagon-loads of bone on his farm, the result of the accumulation of a year or more, he may not be able to handle it in wooden vessels. In that case he can dig a trench in compact soil and put the bones in it to be treated with the ashes, the caustic lime or the caustic potash. The wood ashes will make nearly as valuable a compost with the bone as either of the other two substances named. The farmer can take time to use the ashes. Knowing when he wishes to use the fertilizer he can begin three months before that time to use the ash method. For example, if he wishes to use a bone compost in May he can collect the bones until December, and in that month he can begin preparation. In April he will have the bones decayed so that he can pulverize them thoroughly, and in May they will be in proper shape to apply to the soil.

Stimulant, or Indirect Fertilizers, are those which do not furnish any actual plant food, but make available by their action the nourishment previously existing in the soil. The principal stimulant fertilizers used in agriculture are plaster, lime and salt.

Farmers sometimes get into the habit of making applications of these stimulant fertilizers simply because they get good results for the first year or two after using them. The truth of the matter is that the continued use of stimulant fertilizers will cause the soil to become exhausted of its natural supply of plant food, and the yields will in time show a proportionate falling off.

Lime as an indirect fertilizer corrects the acidity of the soil when a soil is so rich in decaying organic matter as to show a distinctly acid reaction, but this is not a fertilizing effect. We all know that lime compacts a loose, sandy soil, and loosens a too compact clayey soil, but these are all purely physical functions, and have little to do with plant food. It is claimed that soils rich in organic matter and acid are beyond the reach of nutrifying bacteria, and that lime by correcting this acid condition enables the bacteria to act on the organic matter, thus liberating any fertilizer ingredients in a measure; but it is a very delicate matter to adjust the exact condition of "slight alkalinity" by rough applications of lime.

But lime deserves more credit than this one point. It undoubt-

edly aids materially in breaking up soil particles, thus liberating potash locked up in the soil, which otherwise would not be available for plant food. It is an expensive form of potash plant food, however, as a ton of lime by the time it reaches the soil would cost not less than \$4, and this sum would buy ten times the quantity of potash the lime could possibly liberate. It is not generally claimed that lime has any great effect in making available the phosphoric acid existing naturally in soils. For twenty years phosphoric acid has been generally applied in excessive quantities, as compared with potash, yet this phosphate quickly becomes dormant in the soil, and is very slowly acted upon by plants.

Land Plaster is merely lime combined with sulphuric acid. Any value it may have as an indirect fertilizer is due to the fact that it decomposes soil particles, liberating the stores of plant food existing in soils in a state of nature. For example, insoluble silicate of potash with land plaster may form silicate of lime and sulphate of potash, which brings the potash within reach of plants. Soil phosphates cannot, however, be similarly decomposed by plaster; hence it can be of little value as an indirect source of phosphoric acid plant food. It is said that land plaster prevents loss of nitrogen when mixed with decaying organic matter. This undoubtedly is true, but it is of little value as a maker of plant food. It can only hold nitrogen as ammonia, which requires further treatment at the hands of decomposing bacteria before becoming fit for plant food.

Common Salt is credited, in a lesser degree, with all the virtues of land plaster.

HOW COLD AND FROST IMPROVE THE SOIL

We may be inclined to complain about the bitter cold which we are obliged to endure in winter, but with this weather must come many benefits impossible without it. The man whose soil is somewhat inclined to pack down and become hard and impervious to water, which causes it to dry out by evaporation instead of filtration and then plow up lumpy in the spring, should look upon a five-foot freeze as one of his blessings; the frost rends apart the particles of soil and makes it friable as deep as it has been frozen, allowing the water to filter through and get deep into the subsoil. There it will be held against the dry time of the summer, when the crop will get

it, because the surface tension of the soil is improved and capillary attraction draws the moisture up from below, for the use of the growing crops.

The mere improvement in the condition of the soil as regards moisture is not the only good that comes from a hard freeze. The soil is pulverized by the frost, as it never could be by the use of implements, and this makes it possible for the feeder roots of the crops to find their food in every part of the soil. Freezing unlocks the stored fertility of the soil as no other agency can. The whole surface of the earth is heaved up by the expansion of the water in the soil when it freezes, and after the thaws come it settles back loose and friable, ready to yield up its store of plant food and produce larger crops than before.

Of all men the farmer has least cause to complain of the cold that first locks the earth in iron bands and then leaves it better prepared for his use.

ELECTRICITY AS A CROP STIMULANT

Marvelous things have been done by the help of electricity and more wonders are being developed every day. A few years ago experiments in France indicated that the application of the electric current to the roots of growing plants would cause a more vigorous growth. Later, Prof. Lemstrom, of the University of Helsingfors, tried some experiments which seem to justify high hopes for this new system of fertilization.

In these experiments wheat, rye, barley, oats, white beets, red beets, potatoes, radishes, carrots, parsnips, onions, celery, beans, peas, strawberries, raspberries and tobacco were grown in equal areas in two fields, one of which was under ordinary cultivation, while the other was periodically charged with electricity. The results of the electro-culture of the farm produce are most interesting. The yield of tobacco was increased by the electrical treatment of the plants forty per cent.; and the photographs of the two fields—the “experimental” and the “control” lots—only 164 hours after the current was turned on show a wide difference of growth, the augmentation being markedly in favor of the “control” lot. Professor Lemstrom found that a good supply of water was absolutely necessary for the tobacco plants, that very small doses of electricity should be given, and none

at all when a hot sun was shining on the plants. Electrified potato plants gave, in garden soil, an increase of 76.2 per cent., and in the field 24.3 per cent. Red beets gave, in garden soil, 65.3 per cent., and in the field 31.7 per cent. It is proved that electricity will, in a high degree, accelerate the ripening of fruits, berries and roots, and probably develop more sugar in them. In the greenhouse the strawberries under electrical current ripened on an average in thirty days, while those not electrified took fifty-four days to ripen. The same was noted with raspberries, though the difference of time in their case was only seventeen days.

An analysis made in France shows that the electrified roots have fifteen per cent. increase of sugar, and it is noted that the strawberries grown in the "control" field were remarkably sweet. The general conclusions of the Helsingfors results, which have been in many respects confirmed by similar tests in France, are that the discreet application of electricity to plants and vegetables acts most beneficially on their growing and ripening qualities; that the best effects can be attained only where there is a sufficient supply of water for the plants; that for most plants an application of the current for four hours in the morning and four hours in the afternoon, avoiding the hours of the highest sun, when the sky is clear, is judicious; that when the supply of water is abundant the current can be given to advantage during the whole twenty-four hours. The surest way, however, of producing the best effects is to limit the giving of the electricity to a moderate time, so that the vegetative process is not forced too fast. These facts are clearly proven. The important question is: Can the method be applied to agriculture or gardening? Professor Lemstrom says it can, and that the farmer or the gardener will increase his yield forty per cent. by it.

As to cost for effectively electrifying fifty acres \$100 will be needed the first year for the outfit and upkeep. After that the yearly expense will be about \$10. Besides this the electrical treatment will make the soil more productive every year and hasten the ripening of the harvest, thus making the farmer's capital more productive. Professor Lemstrom has turned his experience to account in the construction of a new machine which greatly facilitates the application of the current to farm or garden lands, but he prophesies that before long the farmer will get cheap electricity from the

nearest central station, from which the current will be conducted to the surrounding fields for miles. This promises to be the most practical way of applying electricity to growing vegetables in the future.

DEEP AND SHALLOW PLOWING

This is a subject that every farmer should carefully study from his own standpoint. Some subsoils are comparatively rich in fertility. Then, of course, the soil is fitted for deep plowing, but the plowing should be a little deeper each year until the desired depth is obtained. Where grass or manure is plowed under, of course it is better to plow shallow, unless it might be for a root crop, and of course deeper plowing would have to be depended upon in that case; but for a corn crop on grass land, top-dressed with manure, shallow plowing—four or five inches in depth—will give good results. There is a serious objection to shallow plowing, and that is that the deeper the soil is prepared the greater the capacity of the soil to take up and retain moisture. It has been ascertained that land prepared to the depth of ten inches will take up two inches of rainfall.

ROTATION OF CROPS

One of the best systems of rotation is that which allows a grass or clover sod to be plowed up and planted to corn. But with this, as with all other crops, it is very essential that the soil be prepared in a good tilth before planting.

Preparing Sod Land for Corn.—In order to do this to the best advantage the sod should be plowed in the spring at the first favorable opportunity. In a majority of cases it may be plowed when almost any other kind of land would be too wet. Care must be taken to see that the sod is turned completely under, and the sooner the plowing is done the better is the opportunity for rotting the sod and the less work required to get in a good tilth for planting.

One of the best implements to use in preparing sod land for corn is a disc harrow. It can be run over the ground in the way the plowing was done first and then crossed. In a majority of cases this will be sufficient, and going over with a good smoothing harrow will usually put the land in good condition for planting. Sometimes with old, tough sod more work will be necessary in order to fine properly,

and when this is the case lapping the disc harrow one-half at each working will be sufficient.

Clover and Timothy.—The increasing necessity of growing clover in order to maintain the fertility of the soil is so apparent in the West that no argument on this point is necessary. At an Institute held in Dixon, Ill., Fred Rankin read a paper on clover which brought out considerable discussion. Several farmers present remarked that they could always get a heavier crop of hay by sowing both timothy and clover than by sowing either alone. In other words, both crops seemed to grow as well together as either would alone. No one present seemed to have given the matter much thought, although all agreed that the facts were well known.

After a little thought the reason for this seems plain. It is that the two crops feed on different parts of the soil. The young clover plant does not linger in the surface soil. It begins from the day it starts into growth to seek its food in the subsoil, going deeper every day, and often going six or more feet into the earth. The timothy plant has quite a different habit of growth. Its roots are all near the surface and feed on the upper four inches of soil, rarely going deeper than six inches. Anyone can prove this by going into a meadow when the ground is thawing out in the spring, and pulling up a plant of each. The clover will come out with a long tap-root, while the timothy will show a small bulb, something the shape of an onion set, and from this a thin brush of fine roots spread horizontally through the upper soil.

A clover meadow may be mowed the first year if conditions of soil and weather are not unfavorable. It should be sowed as early as it is possible to get the ground in order, for clover can stand the heat as well as any other plant. Run the mower over the field if the weeds get to be six inches high, setting the cutter bar so as to clip off their tops. This will give the clover time to get ahead of the weeds, and they will trouble no more.

Clover sown in this way will head out and make a fair crop of hay the first season, enough to more than pay the cost of growing, and the field may be plowed under the next season or kept for meadow, giving a large crop of hay. For a short rotation—making it corn, clover and corn again—this is the quickest way to renovate run-down land.

If clover is grown every two or three years there will be no necessity, speaking for a large part of the country, for using commercial fertilizers to restore fertility, nature having delegated to clover a very generous amount of restorative power. In some sections, however, fertilizers are wisely used and give very good results. H. F. McMahon, a young farmer of Union County, Indiana, has made some interesting experiments along this line, and has this to say:

"Corn fertilizers do not impoverish the soil. They should be used in connection with clover and other renovating crops. They are not to be used in preference to farm manures, but in connection with them, for farm manures are cheaper and better than commercial fertilizers. They should be applied with a drill in preference to broad casting." He adds that commercial fertilizers very seldom pay on sandy or gravelly soils; that they are applied to wheat with the best results, but that for corn the farmer should depend on clover and proper rotation.

THE GRASS CROP

"Grass is the most widely distributed of any kind of vegetation, and wherever civilized man is able to live and prosper grass grows. Where people are the most prosperous there grass flourishes best." To this declaration of C. P. Goodrich, of Fort Atkinson, Wisconsin, we would add that people are most prosperous where grass flourishes best, solely because of the fact that permanent prosperity is impossible in any country where grass of some kind does not flourish.

Leaving out maize, oats, wheat, barley, rice and all other grain-bearing grasses there is no single crop that adds so much to the wealth of any meat-eating people as the grasses. Clover, of course, is not a grass, but in popular terminology clovers are included in the grass crops, meaning the crops which furnish pasturage and hay for live stock. The corn crop of this country is valued at something like \$500,000,000, and the hay crop at perhaps \$400,000,000. If we stop to consider that by far the largest part of the live stock of this country does not eat hay at all for six months of the year and a very large part of it not at all during the year, we shall soon understand that the hay crop of the country is but the small end of the grass crop.

Pasturage Grasses.—Of the different varieties of grass usually sown for pastures blue grass is rather the best of all if only one kind

is required, as it starts up early in the spring and stands tramping and grazing rather better than almost any other variety, while if not pastured too close it will furnish pasturage until the freezing weather in the fall. But it is a slow grass to get well established, and on this account should be sown with a mixture of other grasses when desired for pasture.

A mixture of blue grass, orchard grass, red top, timothy, red clover, meadow fescue and rye grass is good, and in some cases mammoth and white clover and sweet vernal grasses may be added. When it is desired to secure pasturage in a short time it is very essential to have the soil in a good tilth. When the seed is sown be sure to use plenty of it, to get it distributed as evenly as possible over the surface, and to sow it as early in the spring as the condition of the soil will admit. The only safe plan is to have the necessary supply of seed on hand, so that advantage may be taken of the first opportunity. Then keep the stock out until the grass plants make a fairly good growth, and be careful that the stock do not graze down too close.

"Many farmers do not realize the value of rye, nor avail themselves of its benefits in preventing their fields from wasting fertility through winter season, or as pasture in winter and early spring. We sow rye for both purposes," writes William T. Wright, of Orange County, Indiana, "and find that cows and sheep do well when pastured on it. Our cows have doubled the quantity of milk given since being turned into the rye field the first of April, when dry feed was very scarce, and the cows had lost all relish for it. At first they were permitted to stay in just a little while at a time, but now they stay on green pasture all day, coming up at night to receive their small ration of ship-stuff and clover hay, contented and happy. There is no reason why every farmer should not have his cows thus blessed. The same field may yet be plowed for corn or other crop, or the rye harvested and the land left in better condition for crops next year."

Hay Making.—In making hay it is always best to begin a few days before the meadow is quite ready to cut. The loss from cutting a week too soon is not to be compared with that arising from cutting a week too late. There is a difference between dried grass and hay made from matured grass, but if the stock is allowed to choose they will take the dried grass. If we do not begin to make hay until it is

just right, bad weather or other untoward circumstances may cause delays that will allow the grass time to get too ripe, and when once this happens it is impossible to make good hay of it. Timothy cutting should begin by the time the blossoms fall from the heads.

"We prefer to begin cutting as soon as the dew is off in the morning," says an Iowa farmer. "If the weather is fair this is left until the next day, when it is raked and allowed to lie in the windrow an hour or two, and is then piled into well-built cocks, where it can stand until the next day, or two or three days if necessary. In these cocks it begins to sweat, and pitching the hay on the wagon and off into the mow airs it out in a way that causes it to cure perfectly in the mow, coming out a bright green and smelling as sweet as new-mown hay."

The use of a hay-loader hastens the work of hay making, but is not conducive to the making of the best hay, as it can be properly cured only by standing in the cock for a time. The average farmer cannot afford to use a hay-loader if he wants the best hay for his stock.

Rules for Measuring Hay.—There is more or less demand for rules in the measurement of hay that will approximately determine the tonnage in stacks.

The custom of giving a seven-foot cube, or 343 cubic feet, for a ton of hay, which was in use years ago in some localities, has not proven satisfactory to buyers, the universal claim being that the measurement does not hold out with scale weights. It has more recently been suggested that a ton of dry hay should be variously estimated from 400 to 500 cubic feet, depending upon the solidity of the stack, the quality or kind of hay and its aptitude to pack closely.

The following rule is given for the measurement of hay in ricks or long stacks: Multiply the length in feet by the width in feet, and the result by one-half the height; divide the product by 300, and the result will be in tons.

To estimate the contents of a round stack multiply the square of the distance around the stack (at the bulge) in yards by four times the height in yards, and point off two places from the right, this will be the number of cubic yards in the stack, which divided by twenty will equal the number of tons.

While these measurements may assist in approximately getting at the contents of a stack, there are so many factors besides bulk enter-

ing into the weight of hay in a stack, there is much more satisfaction when it can be placed on the scales, and we urge farmers in every case where possible to weigh the hay when selling or buying; in fact use the scales in all commercial transactions on the farm. What would be thought of a merchant or manufacturer who "lumped" his goods when selling?

The scale is one factor in putting farmers on a commercial footing with other tradesmen. When once a pair of scales is put on the farm or a platform scale placed in the barn keep it in order, for an incorrect scale is more unsatisfactory than none.

The Cow-pea as a Southern Hay Producer.—"The southern farmer finds after actual experience that the cow-pea is his main plant as a land renovator and hay crop. In the North our friends are fast realizing that they can safely rely on the cow-pea for this purpose. We find the cow-pea a fast growing plant, and two crops can be easily grown in one year," writes W. C. Crook, of Henderson County, Tennessee. "As it is a warm-weather plant one cannot sow the seed safely until after danger of frost. We sow here any time after the 25th of April for early sowing, and from the 15th to the 30th of May for late sowing. I sow at the rate of one and one-fourth bushels per acre in my corn land at time of last cultivation. This I generally harvest for seed.

"The peas don't injure the corn in the least, but on the contrary they are a benefit, as they make a rank growth, keeping down weeds and preventing land from washing.

"I sow seed at the rate of one and one-half bushels per acre after wheat harvest. This I mow for hay, which, in my opinion, when cut at the proper time and properly, makes the very best of feed. I cut the hay when the peas are beginning to ripen. Some growers haul and pack the hay in the barn the next day after it is cut, and while this may be a good plan where one has a free circulation of air, I prefer at least three days' sunshine on my hay before hauling. Some writers also recommend sowing two and one-half to three bushels per acre. This I believe to be entirely too much. I find two bushels a very generous seeding. If one has land too poor to grow corn or wheat profitably he can drill cow-peas in rows three feet apart and make more than by any other crop, and at the same time greatly improve the land.

"One of my neighbors drilled some peas this way in between corn rows. That was on thin land, the rows being five and one-half feet apart. He gathered eleven bushels from a peck drilled. Another neighbor bought one bushel of seed from us, drilled them in and gathered twenty-four bushels of peas. We sow them in our orchards and find them a profitable crop. We sow the Whippoorwill in orchards as it makes less vine than the 'running' kind, which might do some damage to your trees.

"I fence off lots and sow them to cow-peas and turn in pigs, thus getting the best of hog feed and at the same time greatly enriching the land at comparatively no expense.

"One of the greatest difficulties attending the growing of cow-peas is gathering the seed. This is done by hand and is very slow work. There are many kinds of peas that thrive well here, but the Whippoorwill makes less vine and is a great pea. The Black and Clay peas are later varieties and make less peas and a rank growth of vines. These are the leading varieties, but there are many others that do well.

"We should sow cow-peas for three reasons: They will grow well on land too poor to grow clover. They make a larger amount of hay, which all stock relish. If the peas are cut when there are many peas on the vines they form a very good balanced ration. When fed to milch cows the hay will encourage the milk to flow. Good land will produce from three to five tons of pea hay, which sells readily at \$8 per ton. Good land will yield twenty to thirty-five bushels of peas that will sell from fifty cents to \$1.50 per bushel."

CORN AND THE CORN-FIELD

One lamentable waste which goes on under the very eyes of the farmer, and one for which there is no shadow of excuse is that in the corn-field.

In the western and middle states, where thousands of acres of corn-stalks are allowed to stand and go back into the earth, or else be burned in order to get rid of them, this waste is very great. The actual value of the stalk as food is nearly or quite as great as that of the grain itself. In the great corn-growing belt it may not be possible to utilize fully this part of the plant, but for the farmer whose corn-fields do not occupy so extended an area there is not the slight-

est excuse for treating this valuable product as it is treated on the average farm.

Corn should be cut before it is fully ripe. This secures the juices in the plant, at the same time doing no injury to the grain, which will mature after it is in the shock.

Large shocks of corn are preferable to small ones since the surface exposed to the weather is less. Husking should be done as early in the season as possible and the fodder secured at once, instead of allowing it to stand in the field until midwinter or even later, as is sometimes the case. There is very little food value left after the bundles have been soaked through and through by rain, and completely weather-beaten. Fallen shocks should be righted after a wind storm and not allowed to remain lying on the ground.

Care is necessary in stacking the bundles of corn-stalks or they will spoil. The center must be kept full, and not allowed to be on a level with the outside of the stack, or it will settle too much; then when heavy rains come they beat in and following the course of the bundles wet it through.

Where one depends on stacking corn-fodder it should be put in small stacks, these being preferable to large ones. These can be drawn inside the barn to better advantage as required without leaving any portion exposed to the weather.

Load for load, good, bright, well-cured corn-fodder is equal to hay for feeding stock. What is wasted on the average farm often equals the amount actually consumed.

Seed Corn.—James Riley, of Thorntown, Indiana, is a well-known seed man, having originated several varieties. If every farmer would take as much pains with his seed corn as Mr. Riley does the increase in the crop would pay immensely for all the work done in improving the seed. In a recent talk before an Institute at South Bend, Indiana, he narrated his experience in this line.

Many years ago Mr. Riley became convinced after carefully studying the matter that corn can be improved as much as live stock, and by the same methods,—selection, breeding and feeding. He, therefore, began twenty years ago to improve seed corn. From a variety of white corn he developed the Boone County White. Desiring a variety of yellow corn he determined to take an early and a late variety, and establish one of his own that should meet his

wants. He therefore selected a plat separated from any other corn, plowed, prepared and marked it off three and a half feet each way and planted every other row of Golden Yellow, a very late corn. Then he waited four weeks and planted Pride of the North, a very early corn, but with too small ears. He cultivated carefully, and as soon as the tassels began to appear went through and cut out all of the tassels of the Pride of the North as a foundation to establish a new variety. He then commenced to improve the variety, and afterward named it Riley's Favorite. By breeding and feeding he kept on improving it. Next he selected a half acre of ground far away from any other corn to prevent pollen from flying from one field to the other; made the ground very fertile, and prepared the plat as before, marking both ways with the shovel-plow. Then he planted four rows and left one. In about two weeks he planted the remaining rows. This was to keep up a supply of pollen to completely fertilize all the silks on the tips of the first planting. He gave the plants the best tillage, and as soon as the tassel began to appear he cut out all imperfect and barren stalks. He thus obtained a pedigreed variety of corn, which reproduced itself and reduced the practice of growing corn to an exact science.

Mr. Riley always selects the best ears for a special plat like this every year, in order to keep on improving the variety he is using. Many farmers do not appreciate the importance of having perfect seed corn, but select from the crib as they are husking. This is a mistake. Few of them get their corn husked before the germ is injured by frost. He selects early in order to be sure that it has not been damaged in the least. His practice is a most excellent one and can safely be followed by his fellow farmers.

Further directions in regard to obtaining the best seed corn are given below: "Select from cribs ears for seed that measure at least ten inches long and seven and one-half inches in circumference," writes Vernon Allen, of Sycamore, Illinois. "Shell off the corn on the butts and tips and use only that on the center of the cob for seed. Test your seed by planting one hundred kernels in wet sand. If less than ninety-five per cent. grow, discard the seed and select other, for it will grow weak corn. In any field of corn all stalks that do not bear ears of corn are only weeds. Like produces like in breeding corn, just as it does in breeding animals. The pollen falling from

the tassels of barren corn-stalks will produce corn-stalks that will be barren. Cut out every barren stalk. Fields of corn thus improved should be surrounded with at least eight rows of broom-corn, or planted one-half mile from fields containing barren stalks to prevent cross-fertilization."

Planting Corn Too Thick is a common mistake among farmers in this country. Corn is a great sun plant and needs the sunshine, therefore make the rows wide enough to admit the light when full grown. Experiments have told us that when planted thick we have smaller ears but more of them, and when thin, large ears and fewer of them; but we learn by experience also that the better way is not to plant thick on any soil as a rule. It will not be so exhaustive to the soil, and will give more satisfactory results. It is best for the farmer to have only one good variety. If he has more it will get mixed and he will soon have no certain variety—white and yellow mixed and none of it marketable at the highest prices.

The Cocklebur—Ridding the Corn-field of It.—In traveling over certain portions of the corn-belt one is impressed with the undue prominence given the cocklebur; its thorny head is seen in hundreds of corn-fields above the measly, sickly little corn plants that have spent a summer begging for moisture which the bur enjoyed.

It is argued that no manner of cultivation during the growth of the corn crop will keep the burs in check, also that the seed cannot be destroyed by deep plowing, or entirely even by burning, and that so long as the field is planted to corn the burs will come and cause trouble. This is partly true, and yet the bur can be mastered if taken in hand early in life; when the seeds begin to germinate and peep above the surface, a close harrowing or weeding will turn their tender rootlets to the hot sun and thus put them out of the way for all time to come.

Another means by which burs may be successfully combated is to burn them in the fall after they become thoroughly dry; pile them with the stalks and when both are dry fire them, care being taken to gather all the burs into a pile.

The easiest and quickest way, however, to rid the fields of them is by sowing grass or timothy; the latter will check them the first year, and grass or clover and timothy mixed will master them. Often this plan has to be resorted to before the farmers may want to

change the fields from corn. Fields that are cocklebur harbors and where the corn is light, should be thoroughly disked in the spring and sown to oats; then follow with wheat and grass, timothy and red top, or any other hay crop suited to the section. Any plant or fine rooted forage crop that ultimately occupies every inch of space in the field will drive out cockleburs and keep them out so long as cultivation is not given.

Silos and Ensilage.—"The farmers who can well consider the advisability of having a silo are those who keep a large number of cattle on a given area of land, and who find themselves short of a requisite amount of hay, corn-stalks and other roughage," says W. A. Henry. "Such farmers are now usually employing a feed-cutter to make closer use of the dry forage which they produce. They do not like to cut down the number of cattle on hand, and yet do not see how they can produce rough feed enough to supply the present number. Many such farmers, especially dairymen, are buying considerable quantities of grain each year in order to supplant the roughage now raised. They do not object to grain buying, but find they cannot produce all the roughage they need on their own farms, and further find that it is very unsatisfactory to attempt to buy hay or corn-stover (corn-stalks) from their neighbors.

"Such farmers may well consider the advisability of the silo as a factor for increasing the output of their farms. They can count on the fact that if they build a first-class silo and place more or less of their corn crop therein each fall that the loss from the crop so stored will be much smaller than if the corn is cut and shocked and fed either long or through the feed-cutter.

"To place a corn crop in the silo in the fall costs from seventy-five cents to \$1.25 per ton for all of the labor involved in cutting the corn by the harvester until it is properly pitted. An acre of Illinois or Iowa land produces from twelve to fifteen tons of silage. The shrinkage through loss of moisture, actual nutriment, etc., will run about fifteen per cent. Good silage contains an abundance of ears, and so the cows or other cattle get about all of this form of grain they require from the silo. A dairy cow in full flow of milk, or a fattening steer during the first stages of fattening should be allowed from thirty to forty pounds of silage per day. With such a ration as this a cow will not eat over from four to six pounds of hay per day

additional. Of course she should have some bran, middlings, oats or other protein food to make up the protein requirement.

"Persons who make use of the silo use the corn harvester for gathering the crop the same as if it were to be placed in the shock. The green material is hauled at once to the silo, and this leaves the field clear for fall plowing or for seeding to winter rye, winter wheat, etc. There is no expense for husking the corn, or for shelling, or grinding it. The feeding of the stock is greatly simplified in the winter time, for the cut silage is rapidly and easily handled by using large forks with which it is quickly pitched through the openings of the silo into the feed car or wagon, to be hauled to the feeding racks or manger. When good corn silage is properly fed there is not a pound of the corn-stalks wasted, all being readily eaten by all kinds of cattle. There is no other kind of roughage so generally palatable to dairy cows as well-made corn silage. In some experiments which were conducted at this station cows were allowed six pounds of mixed hay and corn silage for roughage. In some cases the cows would not eat this small allowance of hay unless extra pains were taken to have them do so by sprinkling meal over the cut hay.

"The writer believes, and the experiences of some of our cattle men are showing, that silage is very useful for steer feeding, especially during the earlier stages. At this time the animal's digestive tract needs to be well distended, and this succulent food seems admirably suited to the purpose. We all know how successful English stockmen are with their combination of roots, meal and hay. Now, why should not corn silage, containing, as it does, the succulent corn-stalks and the chopped up ears of corn, prove fully as good as the Englishman's pulped roots?"

An acre of corn-stalks plowed under in the spring is said to have a fertilizing value of about \$5. If those stalks were cut at the proper time in the fall and converted into silage they would have a feeding value twice as high as their fertilizing value. But a large number of farmers neither plow under corn-stalks nor cut them for ensilage, but burn them and thus lose \$10 per acre. Because this loss is not as perceptible as is the burning of a barn or the destruction of a crop few farmers know or care anything about it, but it is a leakage that must be stopped if farmers are to succeed.

How to Build a Silo.—A silo can be built without great expense or

trouble. One constructed by the Indiana Experiment Station holds about sixty-five tons. It is 12 feet in diameter and 28 feet high; studs 16 and 12 feet, of 2×4 pine, were placed vertically end to end, long and short alternating to break joints and 17 inches from center to center, on a circular brick foundation two layers deep. No. 1 pine fencing 1×6 inches \times 16 feet was then resawed to make boards $\frac{1}{2} \times 6$ inches \times 16 feet, and these dressed to make them lie true. These were then nailed around on the inside against the studs, forming a circle, two men bending them into place and nailing them on. First one layer was nailed up for a space, then tarred paper was placed over this layer and this was followed by another layer of half-inch stuff, breaking joints with that underneath. Four doors were left at convenient intervals, the width between studs, and about eighteen inches high. Boards and tarred paper may be laid in these doorways, the ends lapping against the studs, as the silo is filled. No roof is provided or necessary.

Such a silo is strong and inexpensive, and will preserve the contents in good condition. This one cost, without boarding the outside of the studs, slightly under \$60, not including labor. The cost would be much less in many places.

Care of Corn-stover.—"No subject is more important for the farmers in this latitude than the care and use of corn-stover; anything bearing on this must be useful. I therefore wish to tell your readers of a cheap and simple, yet very useful, device for preventing husked fodder from heating," writes Alexander Johnson, of Fort Wayne, Indiana.

"Yesterday I visited a friend who had his corn husked and shredded by a traveling husker. Although the fodder was by no means dry when put in the mow, it is now perfectly bright and sweet. My friend packed his shredded fodder as closely as possible in his mow. Finding after a day or two that it began to heat he went to his forge and made himself a sort of harpoon of three-eighths inch rod iron. This he plunged into the mow as far as he could reach and drew it out, thus pulling out a few handfuls of fodder and making a vent or air hole into the mow. He did this repeatedly until the heat went down, which only took an hour or two. Anyone can make such a tool in a few minutes if he has a forge, as every farmer ought to have; if not, a blacksmith will make it for a few cents. This

device may be a very old one, but at any rate it is new to me, and my friend thinks it is an original idea, and that it has saved his fodder, which otherwise would soon have become musty."

Broom-corn is hardy, is a great drouth-resister and thrives under reasonably unfavorable conditions. It can be planted from any time from the opening of spring until as late as July 1, with fair assurance of a crop. But as early harvesting and early marketing are especially desirable, it is usually advisable to plant it as early as Indian corn is planted.

There are numerous methods of planting it. It is planted in rows, checked and drilled. Drilling in rows gives the best results. The rows should be about three and one-half feet apart and the stalks about six to eight inches apart in the rows on ordinary upland, and a little thicker on bottom land. If it is planted too thin on good soil the heads become so heavy that their own weight bends many of them down, forming the "crooks." This crooked brush is heavy, but because it is more difficult to make into brooms and makes a larger bulk in shipping it brings only about half price on the market. Owing to its being a hardy plant the cultivation of broom-corn is often sadly neglected. It will make a fair showing on poor land with very little cultivation, but it responds to good treatment and should be cultivated as often and as thoroughly as Indian corn. After the first heads appear it is not long before it is ready for harvesting, and everything should be in readiness, because it soon depreciates in value after it is once ripe enough to cut. In order to make the best brush it should be cut when the seeds are in the dough stage. A small patch for seed can be left until fully mature.

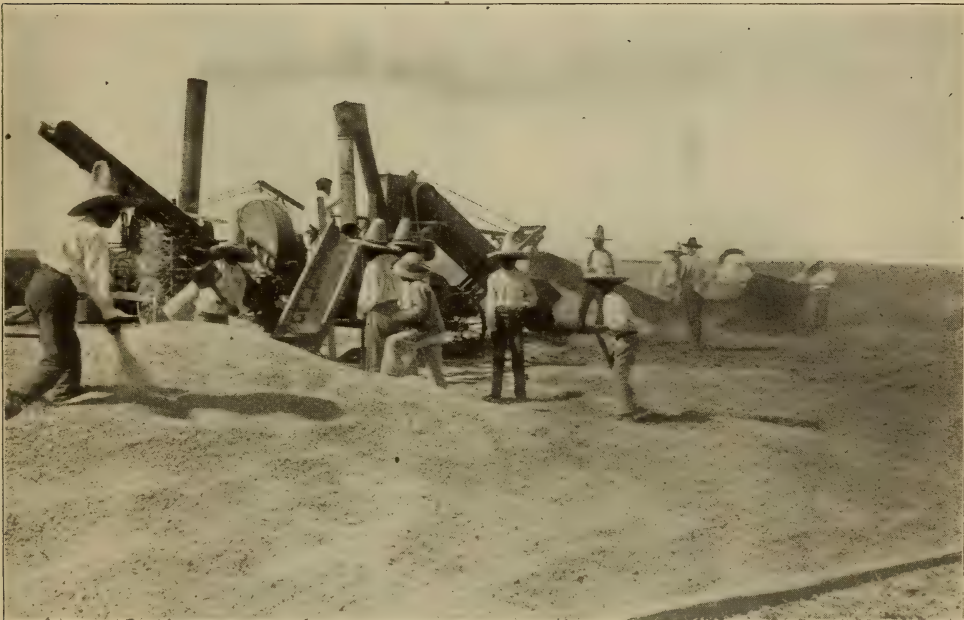
The standard varieties are harvested by breaking two rows together in such a manner as to form a table upon which the heads after being cut off are laid to cure. It should remain in the field about a day. A light rain or a heavy dew injures the color of the brush. It is well, if possible, to cure it entirely in a shed. But if put in while green it must be placed in thin layers, which requires considerable extra shed room. If left in the field, however, about a day after cutting until it is nearly cured, it can be piled in good-sized layers, under cover, and seeded when convenient. The seeding is done by holding the brush on a cylinder similar to a thrashing machine cylinder. After it has been seeded it should be bulked



United States Department of Agriculture

A FIELD OF PUMPKINS GROWN FOR SEED.

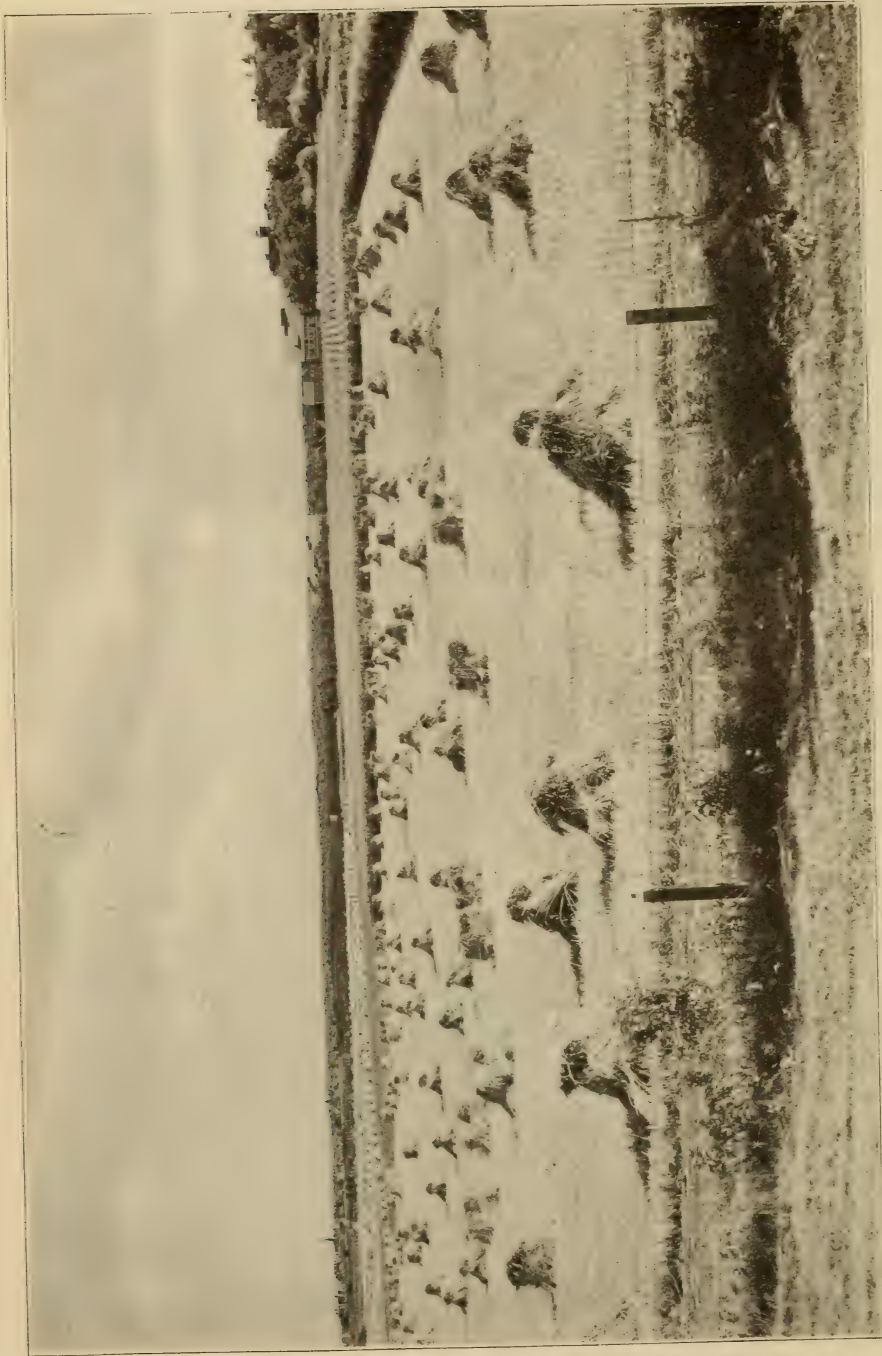
Pumpkins are such a robust rollicking kind of vegetable that we cannot imagine the man who is carrying them away to be in anything but good humor.



Courtesy of Breeder's Gazette

SHELLING CORN IN MEXICO.

In many respects Mexico is an up-to-date country, having in her mining and agricultural methods largely adopted and imported the improved machinery of the United States. The picture explains itself.



Courtesy of the Breder's Gazette

ALL FROM A KERNEL OF WHEAT.

The rapidity with which nature increases her riches, with the intelligent assistance of man, has a remarkable illustration in this field of wheat. It is five acres in extent and, within six years, has developed to its present proportions from a single kernel of wheat.

down in good-sized piles and allowed to dry until the stems break quite readily. Then it is ready to bale. Both the seeder and the baler for a small farmer can be made by any carpenter at a trifling cost.

The yield varies with the soil and locality, but a good average yield is a ton of thrashed brush from three to five acres. An experienced hand can cut about one acre a day. The thrashing and baling costs about \$4 per ton. The price varies so much that the profits for one year can seldom be assumed as a standard. Ordinary brush averages about \$60 to \$70 per ton.

It is a good crop on the sod. It shades the ground and helps to rot the sod, besides making as good a growth as Kaffir or sorghum without cultivation.

The seeds and stalks are utilized for feed, but their feeding value is low, and it would hardly pay to raise it for feed alone, although in the western part of Oklahoma dwarf broom-corn is sown for roughage instead of sorghum because it does not sour in the stack so badly. After the brush is harvested the stalks can be used for forage and then plowed under, making an excellent green manure.

Its cultivation on a very large scale is seldom successful, but if properly handled on a small scale, say from fifteen to twenty-five acres for the average farmer, and especially on new land where the variety of sure crops is limited, it will prove to be as paying as almost any crop that can be raised.

WHEAT AND ITS CULTIVATION

The manifold uses to which wheat has been put as a food-maker has caused it to be looked upon as the king of grains, and there is probably no one of them which has received so much attention from inventors of farm machinery. Improvements in the sowing of the seed, the cultivation of the soil and the harvesting of the grain are so numerous as to form a class by themselves. While foreign countries are being educated to learn the value of corn as a food product, for centuries they have known the value of wheat, and used the grain in many forms.

In the United States the value of the corn crop, however, is about twice that of wheat. Abroad our principal competitor in the production of the latter cereal is Russia, whose crop amounts to some

450,000,000 bushels yearly, against the 520,000,000 produced in the United States.

The wheat belt is the widest of the important grains. In November wheat begins to ripen in Peru and South Africa; in January, Australasia commences to harvest it; in February, March and April, East India, Egypt, Asia Minor, Mexico, etc. In May wheat begins to ripen in southern United States, and the last of the crop is harvested in the fields of Minnesota, the Dakotas and Canada in September, or later.

Then the great elevator systems come into play and the world commences to draw upon the United States for much of its supply.

The subject is so broad, and yet familiar, that we here present only a few practical matters.

Wheat Cultivation.—An authority on the subject gives the following as the best way to cultivate wheat: "On soils really calculated for wheat, though in different degrees, summer fallow is the first and leading step to gain a good crop of that grain. The first furrow should be run before winter, or as early as the other operations of the farm will admit, and every effort should be made to go as deep as possible, for it rarely happens that any of the succeeding furrows exceed the first one in that respect. The number of after-plowings must be regulated by the condition of the ground and the state of the weather, but in general it may be observed that plowing in length and across, alternately, is the way by which the ground will be most completely cut and the intention of fallowing accomplished."

Wheat Manure.—A good wheat manure may be made as follows: Take twenty-eight pounds of crude potash, one hundred pounds of common salt, two hundred pounds each of bone dust and gypsum (plaster of Paris) and fifteen bushels of wood ashes. Mix them well together.

Diseases of Wheat.—Wheat is perhaps subject to more diseases than any of the other grains. Among the most important are blight, mildew, rust and smut. Besides these troubles, brought about by conditions of the weather, there is the danger of the attack of various insects either at the roots or upon the ear and straw. Blight, which originates from too moist weather, or hoar frost, affects first the leaf or straw and then the ear. In fact it may be called a stoppage of perspiration, and is most fatal when the grain is forming.

Mildew on the ear originates from similar causes, and usually appears earlier than blight. In warm, moist seasons, a gum, much like mildew, is often deposited, which is generally accompanied by minute vegetable growths. One remedy for the removal of blight is ammoniacal liquor—one part of liquor to six of water, boiled together. A decoction of elder leaves will prevent, or remove mildew, if the disease is not too far advanced. A solution of common salt in water, in the proportion of a pound to a gallon, is an excellent remedy for mildew. After sprinkling three or four days the mildew will disappear, leaving only a discoloration of the straw where it was destroyed.

Rust is brought on by extreme heat, and gathers on the stalks and leaves. It is easier to be treated than either blight or mildew, as all that is needed is to furnish the stricken wheat with the required moisture.

The treatment for smut in wheat, as in other grains, will be found on page 357.

OATS, RYE AND BARLEY

This is the general order of importance in which the staple grain crops of the United States follow corn and wheat. The oat crop is by far the greatest in value of the grains named above, amounting to about \$200,000,000 per annum, or two-thirds that of wheat.

Oats.—The varieties of this grain are more numerous than those of any other; among these are the common oat, the Angus, the Poland, the red, the Siberian and the potato.

“Oats are chiefly sown after grass,” it is stated by an expert; “sometimes upon land not rich enough for wheat, that has previously been summer-fallowed, or has carried turnips; often after barley, but rarely after wheat. One plowing is usually given to the grass lands, and the land sufficiently mellowed for receiving the harrow. The best oats, both in quantity and quality, are those which succeed grass.” The chief oat-producing districts in the United States are embraced by Illinois, Iowa, Wisconsin, New York, Pennsylvania, Ohio, Indiana, Kansas, Nebraska and Texas.

Rye.—This grain should never be sown upon wet soils or even upon sandy soils where the subsoil is of a retentive nature. Upon all soft lands, which have been well manured, rye thrives well. It may

succeed clover or turnips; even after oats good crops have been raised. The great producers of rye in the United States are Pennsylvania, New York, Wisconsin, Kansas, Iowa and Illinois.

Barley is best raised on light and sharp soils, and its production has been greatly increased within the past twenty years by the growth of the brewing industry both at home and abroad. It is a tender grain and easily injured during any of the stages of its growth. Even the harvesting of it is difficult. Owing to the brittleness of the straw after it has reached a certain stage of growth, it must be cut down, as when allowed to stand longer much loss is sustained by the breaking of the heads. Barley, in fact, is raised at a greater expense than most of the grains, because of these many risks which must be taken.

VARIED FARM CROPS

Frank Skinner, of Sibley, Illinois, is a tenant farmer who grows corn and oats for his money crops, but he has shown that he need not stop at these two staple crops for all the money the farm returns to him. He has been experimenting in various directions, and for his winter market has 40,000 gladiolus bulbs, which are worth from \$4 to \$10 a thousand at wholesale, and there is a steady demand for them.

Mr. Skinner also has tried small fruits on a small scale, as he has not had time to devote much attention to them while growing his main crops. He has but a small patch devoted to berries, yet each year he sells to tenants of the Sibley estate something like \$100 worth of berries. This branch of fruit growing is neglected everywhere by farmers who think they cannot bother with small truck, and yet here is a case where a tidy sum of money is being made every year at a very small expenditure of time, while the farmer is tending his main crops.

The average crop of corn on the Sibley farms is thirty-six bushels. For his berries Mr. Skinner gets as much money as could be got for the product of ten acres of corn, and they were grown on a small plat of ground, with one-tenth of the labor that would have been expended on the corn. It is safe to say that of the \$100 received for the berries not to exceed \$20 should be charged to the expense of growing them. This shows where profit may lie in small things.

HOW TO TREAT SMUTTY GRAIN

Conservative estimators place the average annual loss of oats due to smut at eight per cent. of the total crop. This means three to four bushels per acre, or \$50,000,000 worth every year in the entire United States. All this loss might be prevented by properly treating the seed before sowing. The Department of Agriculture recommends two methods of killing the smut parasite. They are described on page 411 of the 1894 Year Book, and also in Farmers' Bulletin, No. 75. Those who are intending to sow a large acreage of oats should send for this bulletin.

The Jensen hot-water method consists in scalding the grain in water heated to a temperature of 132° to 133°. The grain is first wet and warmed in water kept at a temperature of 110° to 120°, and then plunged in and out of the scalding hot water six or eight times in ten minutes, the oats being held in a wire basket or gunny sack. This method is hardly practicable, as it is a difficult matter to keep the water at the requisite temperature, which must not vary more than one degree.

Soaking the seed in a solution of potassium sulphide is the other method recommended. Buy one pound of "liver of sulphur" for every six bushels of oats to be treated, and keep in an air-tight vessel until ready to use. It costs twenty-five to fifty cents per pound. Dissolve one and one-half pounds in twenty-five gallons of water in a barrel or other wooden vessel and mix thoroughly. Pour in three bushels of oats and leave twenty-four hours, stirring several times during the day to insure the wetting of each grain. The oats should be spread out and allowed to dry before sowing. The same solution should not be used more than three times. Where large quantities of oats are treated a hogshead or wooden tank may be used. Don't allow the solution to come in contact with any metal.

Out in Adams County, Washington, blue vitriol is used as a smut killer, one pound being considered sufficient for five bushels of grain. The latter is enclosed in a gunny sack and dipped in a barrel two-thirds full of water, to which enough blue vitriol has been added to color the liquid a deep blue. The blue vitriol should first be dissolved in hot water. After soaking five minutes the grain is removed and placed on an inclined plane so that the surplus liquid will run

back into the barrel. After draining the grain is spread out to dry and is soon ready to sow.

One Iowa farmer finds one pound of blue vitriol sufficient to kill the smut parasite in sixteen bushels of oats. One ounce of blue vitriol is used to each gallon of water. The solution is sprinkled on the grain, which is shoveled over and resprinkled until one gallon of the solution has been absorbed by each bushel of oats. The man above alluded to has followed this method for thirty-five years with complete success on both wheat and oats.

Another excellent method is to dissolve one pound of formalin in fifty gallons of water and then sprinkle the oats with this solution, using one gallon for each bushel. Spread out the oats in a layer three inches deep and sprinkle until thoroughly wet, then add another layer, sprinkle again, and so on. Allow it to soak two hours, then spread out and shovel over once or twice a day until dry. Formalin costs fifty to seventy-five cents per pound. It is also used to kill potato scab, but it is not so effective as corrosive sublimate.

It is to be hoped that those who sow oats will treat their seed according to one of the above described methods. This is a new thing to most farmers, but there is no doubt about its desirability and effectiveness.

1.—An experienced grain grower says especially about wheat: "To wash your seed wheat take a common washtub about two-thirds full of water and pour into it half a bushel of the grain, and after stirring with a stick skim or pour off what rises on the water, taking care not to let the good wheat run out; then empty into a basket or some vessel that will retain the wheat, and drain off the water; put it on a clean floor and sift or sprinkle onto it about a peck of dry ashes, stirring it over thoroughly so as to cover all the surface with the ashes. Treat the whole quantity to be sown in the same way. After it has lain a few hours it will be ready for sowing. This has proved a sure preventive in every case of trial with me, but when it has been omitted there has been plenty of smutty grain."

BIRD AND INSECT PESTS

How most effectually to rid the farm of troublesome and destructive pests, such as crows, sparrows, weevil, chinch bugs, ants, flies,

etc., etc., is a great problem. Some practical suggestions which will go to solve the question are given below:

"Scarecrows"—Some Novel Suggestions.—Here are a few novel suggestions for "scarecrows" where such sentinels are necessary. Two small, cheap looking-glasses fastened back to back should be hung by a cord from the top of a long slanting pole. On a sunshiny day, as the glasses swing, the rays of light are reflected wildly all over the field, and being a mystery it will terrify crows and other invaders.

"Take a large potato and long goose or duck feathers, which are to be stuck into it so as to resemble the spread tail and wings of a hawk. It is astonishing," says the *Scientific American*, "what a ferocious looking bird of prey can be constructed from the above simple material. It only remains to hang the bird from a tall, bent pole, and the winds will do the rest. The bird will make sweeps and dashes in a most threatening manner."

A farmer friend declares that if a few kernels of corn be strung on long horse hairs and placed about in the fields they will help to keep away the crows. The crow will swallow some of them and make such a fuss in his efforts to get rid of the astonishing dose that he will drive his friends away and go away himself.

Sparrow Extermination.—Farmers who are troubled with the devastation of their crops by English sparrows will probably be interested in a method of extermination of these winged pests as described in a New South Wales report.

In substance, it deals with a method of strategy to entice the sparrows so as to readily eat grains of wheat which have been thrown into a compartment, one end of which is divided off and in which is kept a fowl. The sparrows must not be molested in feeding, and after a week the wheat should be soaked in sugar and vinegar. Allow the birds to become used to this mixture when the "deadly" work may be brought into action. Mix a little strychnine, which has been dissolved with some vinegar and plenty of sugar. Soak the wheat in the poisonous mixture. Let this stand for twelve or more hours, then drain off the liquor and dry. A small quantity should then be sprinkled in the unoccupied portion of the coop at the time when the fowl is receiving its allowance of wheat. It is very deadly, one or two treated grains killing a sparrow. The dead birds should be removed from the coop or the sparrows may take fright.

Destroying the Grain Weevil.—In the fall the grain weevil begins his work. The use of carbon bisulphide in destroying it is very effective. In ordinary cribs and bins the most important provision is to make the room as nearly as possible gas-tight in order that the gas may remain in all parts of the space in full strength and for the required time. It must enter by diffusion all cracks and crevices, even those between the grains of corn in the ear, and must penetrate the burrow of the individual weevil or its grub in the wheat berry. This thorough diffusion will only occur after some time, even in a saturated atmosphere. Twenty-four hours is short enough for certainty, even where the gas can be kept full strength in the bin.

Except with highly organized insects death does not occur immediately, and partial suffocation may only render the insect insensible, leaving it to recover fully upon the airing out of the bin, or the gradual escape of the gas through cracks in the floor or sides of the bin; allowing the entrance of fresh air may cause failure through the subsequent revival of the insect. The adult grain moth readily succumbs to gas, while the larvæ will stand more and yet revive. The black weevil is most difficult to kill, specimens remaining over night in an experimental killing bottle sometimes recovering when removed therefrom the next day. Hence, to destroy all these it will be necessary to continue the action of the gas in full strength for at least twenty-four hours, and to do this the bin must be made tight, the fluid carbon bisulphide be used in liberal quantities, and in case of doubt the experiment repeated.

Wheat may be largely kept free from weevil by proper handling, frequent shifting and fanning, such constituting the chief reliance in the elevators. Corn in cribs can scarcely be freed from weevil while remaining there owing to the practical impossibility of making the crib sufficiently tight. Tarpaulins and stack-covers are useful in assisting to retain the gas within limits, but are by no means tight enough to prevent the escape of the gas by diffusion before the black weevil can be destroyed.

As carbon bisulphide is highly inflammable no fire or light should be allowed about the bin while the fumigation is going on.

Exterminating Chinch Bugs.—The chinch bug we have always with us, and it is well to prepare for him in advance. This may be done with little trouble if begun in time. Last season the following

method was successful at the Oklahoma Experiment Station. A drive extended along the west side of the wheat field; next to this drive was a narrow strip of castor beans and then a few rows of cotton and next to the cotton four rows of sorghum. Cow-peas were listed in the wheat ground as soon as the wheat was cut, which destroyed some bugs. Many escaped and went across the drive, the castor beans and cotton to the sorghum. When they had well collected on this, four rows planted as a "trap crop" were plowed under very deep and rolled down hard. Beyond this strip were a few rows of cotton and then four more rows of sorghum also planted as a "trap crop." The bugs that escaped from the first trap passed on to the second, and when they had collected in this second strip it was plowed as the first and thereby nearly all the bugs were completely destroyed. A few more rows of cotton were planted beyond to the west of the second strip that was plowed, and then Kaffir corn, which was saved from the bugs. This may often be done in a similar way if the crops are planted with this in view.

The few bugs that escape such vigorous treatment as this should be infected with the chinch bug disease. Those who wish infection should send a small package of bugs to the Agricultural Experiment Station, Stillwater, Oklahoma, and will receive in return a package of infected bugs with direction for spreading the infection. This should be done early and before the bugs begin to destroy the crops.

The following remedy for chinch bugs was suggested in 1895 by Prof. S. A. Forbes, state entomologist of Illinois: "Dissolve one-half pound hard or soft soap in one gallon of water and heat to the boiling point. Remove from stove and add two gallons of coal oil, churning the mixture with a good force pump for fifteen minutes. When the emulsion is formed it will look like buttermilk.

"To each quart of this emulsion add fifteen quarts of water, and apply to the corn in a spray—preferably before 10 A.M. or after 3 P.M. The bugs should be washed off so that they will float in the emulsion at the base of the plant. A teacupful to a hill is generally sufficient, but the quantity must vary with the number of bugs infesting the corn."

The progress of these bugs through a field may be obstructed by making a shallow V-shaped trench with the corner of a hoe and filling it with coal tar, the tar to be removed in two or three days.

They may also be destroyed by plowing them under and harrowing and rolling.

One of the very best ways to fight chinch bugs is to make war upon them in their winter quarters. They hibernate in old trees, stumps, piles of leaves, brush, corn-stalks, etc. Burn everything of this kind you can.

To Destroy Ant Hills.—Carbolic acid in water, three ounces to the gallon, sprinkled upon ant hills in the lawn will destroy them or drive them away.

Place a little tartar emetic mixed with sugar in a shallow vessel, and stand it in the path of the ants you wish to exterminate. They will eat of this poison and take it home to the queen. After she succumbs to the effects of the poison, of course there will be no increase of the little pests, and they will finally disappear. This mixture may be preserved from year to year and still be a satisfactory exterminator of ants. Destroying the queen is the only way to get rid entirely of the little pests.

Destroying Insects on Plants or Animals.—"It may not be generally known that skim milk or buttermilk readily mixes with kerosene, forming an emulsion which destroys insects without danger of injury to the animals or plants on which they may be. We first learned of this from using the mixture for the scale insect, or mite, which causes scaly legs on fowls. It was found that one or two dippings or washings with it would cure the worst case of scaly leg and leave the skin as smooth as when first hatched. We never had occasion to try it for lousy animals, for we never had one, but we do not hesitate to recommend it, and we have lately seen its use advised for ticks on sheep, using a gill of kerosene to one gallon of milk. We did not make our mixture so strong of kerosene as that, but perhaps the larger tick may need a stronger application than an insect so small as to be scarcely visible to the naked eye."

Building a Vermin-proof Granary.—It is surprising to see how few corn-cribs and granaries are built vermin-proof. By setting the posts in the ground and placing a tin pan on top of each, beneath the sills, rats and other vermin may be very easily kept out. The same result may be as easily obtained if one wishes to build in a more substantial manner by setting the posts of the building itself, which should extend three feet below the sills and rest on large flat stones or

masonry to prevent rotting, and then tacking good-sized sheets of tin around the posts to prevent the rats and mice climbing. The amount of grain destroyed by vermin in ill-erected granaries can hardly be estimated, but it is an immense amount. Why not prevent it?

HOW TO KILL JIMSON WEED

The jimson weed, with which most farmers are familiar, is an annual, and may easily be killed or eradicated. The step to take is to prevent it from maturing or spreading seed. Where extensive patches abound they may be mowed down while in blossom.

Jimson weeds are poisonous. The seeds will kill children and animals that eat them. The flowers, too, are poisonous to all living beings who suck their petals. In cases where young plants of these varieties of the nightshade family have been unobserved in grass and cut and dried in the hay the horses and other stock that ate the hay were fatally poisoned. Cattle generally avoid the green plant, as its rank odor is unpleasant to them. The weeds are dangerous nuisances and should be destroyed.

The more discouraging the waste pile seems to be to all other vegetation the more attractive and nutritive it is to this vile weed. Because it springs up in waste it is often considered of no account as a weed, and that is where the farmer errs. Left to mature its seeds in the waste, the nuisance can depend upon natural agencies to carry its poisonous seeds where they will do the most harm.

CURING SKINS OF SMALL GAME

Boys on the farm who go out on autumn days in search of game should not forget that the skins of raccoons, minks, muskrats, rabbits, foxes, deer, cats, dogs, woodchucks and skunks are all valuable. Handsome robes may be made from the skins of the last two animals, and fur coats are made from the skins of woodchucks, well tanned, dyed and trimmed, which are elegant as well as comfortable, and no one but a connoisseur will be able to guess their origin. Of the finer and nicer furs, beautiful collars, muffs, cuffs, caps, gloves and trimmings may be made with little ingenuity and perseverance, and who would not feel great satisfaction in wearing a nice article from the fact that it was a product of his own manufacture and taste?

A very good and simple tanning process for use on the farm is to sprinkle the flesh side, after scraping it well, with equal parts of pulverized alum and salt, or washing it well with a strong solution of the same, then folding the flesh side together and rolling it compactly, in which state it should remain for eight or ten days; then it is opened, sprinkled with bran or sawdust to absorb the moisture and rolled up again. After remaining twenty-four hours the process is completed by thorough rubbing and manipulation, on which the pliability depends.

Skins when taken off should be freed from grease or flesh by thorough scraping, when they may be dried and left to await the leisure of the owner. Previous to tanning they must be well soaked and wrung dry.

Take about ten gallons of soft water, one-half bushel of wheat bran and seven pounds of sulphuric acid. After dissolving put the skins into the solution and allow them to remain twelve hours; take them out and clean them well, and again immerse twelve hours or longer if necessary. The skins may then be taken out, well washed and dried. They can be beaten soft if desired.

CHAPTER XIV

THE GARDEN

Proper Drainage, Fertilizing, and Watering—Selecting and Testing the Seeds—Garden Tools—The Hand Hoe—The Vegetable Garden—When and How to Plant Different Vegetables—Weeds and How to Get Rid of Them—Harvesting Vegetables—Potatoes, Cabbages, Cauliflower, Tomatoes, Onions, Rhubarb, Asparagus, Horseradish, Celery, Pumpkins, Turnips, Oyster Plant, Mushrooms and Other Vegetables: How to Raise Them and Properly Care for Them—Berries, Grapes, and Melons—Shrubs and Flowers—Ginseng and Peanuts—Insect Pests and Insecticides.

The commonest excuse for not having a garden is that there is no money in it, and the owner cannot afford to waste his time on it; but this is no reason at all. There is not a good garden on any farm that has not paid for itself in cash every year it has been cultivated. The farmer who has not a good garden usually lives largely on bread, meat and potatoes, and his outlay for sugar and coffee, spice and other needful things amounts to a considerable sum in a year. Even if he produces his own meat and flour and potatoes they are all staple articles, which may be sold any day in the year for cash, and are, therefore, to be counted as cash in making up the accounts of the year.

If there is on the farm a good garden filled with all the varieties of vegetables that may be grown in the locality, there is an immense saving in the consumption of meat, flour and potatoes, vegetables being substituted for these articles. A half acre garden will produce enough vegetables for the largest family, and for at least five months in the year some of these are available every day in supplying the table with wholesome food that is both appetizing and nutritious—and please observe that wholesome, appetizing and nutritious are not terms that are interchangeable. An article of food may combine all three, or any one or two of them without the others.

This garden produce is invariably wholesome, appetizing and nutritious, and may be produced at less actual cost for the amount of

food value than any other food products. This being true, the garden is a money-saving institution, as well as a promoter of good health.

Draining the Garden.—There is no danger of getting the garden too well-drained. If the whole surface were underlaid with tiles at a depth of from two to three feet it would be of benefit to the soil. Practically there should be, for perfect results, a drain every rod. These drains should be given a good outlet and should be three feet or more below the surface. In theory a tile drain will “draw” a strip four times as wide as the depth of the ditch, but practice teaches that tile drains draw much farther than this. In practice drains as far as ten rods apart lower the water table over the whole space between the drains, but this work is not so quickly done as when the drains are close together.

Drainage is always done with several things in view. The first object is to get rid of the surplus water in the soil, the second to permanently lower the level at which water stands in the soil. This level is not fixed, but varies with the texture of the soil. Most soils hold the water too near the surface for the good of the crops. This surface water usually disappears after the spring rains have ceased, but in undrained soils it remains long enough to permanently injure the crops.

Another reason for draining is to make the soil porous, so as to admit air and warmth that the crops may be planted earlier in the spring and grow later in the fall. Well-drained land is not affected seriously by either drouth or extremely wet weather, and as a consequence crops do better in the garden that is well-drained.

Systematic Planting.—Before the time for planting comes make a plan of the garden and plant systematically, so as to get the most off the ground during the coming season, and thus make the garden more profitable than it ever has been before.

Plant all the rows north and south, so as to allow the sun to shine equally on every row and on both sides of it.

Plant the early radishes, lettuce, beets, peas, and beans by themselves, on one side of the garden, planting the later vegetables in another strip, so as to have one side of the garden clear as soon as possible in order to put in the later crop of cucumbers for pickles, winter squashes, turnips, celery, etc.

If the garden is planted in this way it will be possible to grow two crops on all of it except that part devoted to Lima beans, parsnips and one or two other things that require the whole season. Squash vines planted among the early potatoes will begin to run about the time the potatoes are used up, and will have a free space to grow in.

Put on a coat of manure and plow it in as soon as the ground can be worked in the spring. It may even be plowed a little wet if the work is done early enough so that it will freeze afterward, as the frost will break up the soil and make it loose and friable. Plow deep and thoroughly, for there is no better preventive of the effects of drouth than deep plowing and perfect pulverization.

The farm garden that does not produce at least \$50 worth of vegetables on half an acre is land wasted, and with a little pains twice this amount may be produced.

Watering the Plants.—Some plants to thrive as they should require much more water than others, and on this account if the best growth is maintained through the summer more or less watering will be necessary. But if watering is necessary, if any considerable amount of benefit is secured, it is very essential that it be thorough. One or two thorough soakings of the soil in a week around the roots will be of much more real benefit to the growing plants than a daily sprinkling on the surface.

One of the best plans of watering a larger proportion of plants is to work the soil into a good tilth, drawing the earth away from the plant to some extent, then put on water sufficient to thoroughly wet the soil, and throw over this a thin layer of fine soil. This acts as a mulch and lessens evaporation, and a large amount of benefit is derived and the work need not be repeated so often.

In nearly all cases where watering is commenced it will have to be kept up until there is a good rain.

FERTILIZING THE GARDEN

There is no better way to fertilize a garden than to haul fresh manure from the stables and spread it over the surface during the winter. Contrary to common belief there is never a time when manure is so rich in plant food as the day it is made, and the sooner after that it can be got to the place where it is to be used the more value will it add to the soil. It is almost impossible to put too much

manure on a garden. We would not hesitate to put it a foot thick on the surface, for it will leach only so much more plant food into the soil, and by plowing time next spring will be settled down until it can easily be plowed under to furnish humus for the betterment of the physical condition of the soil.

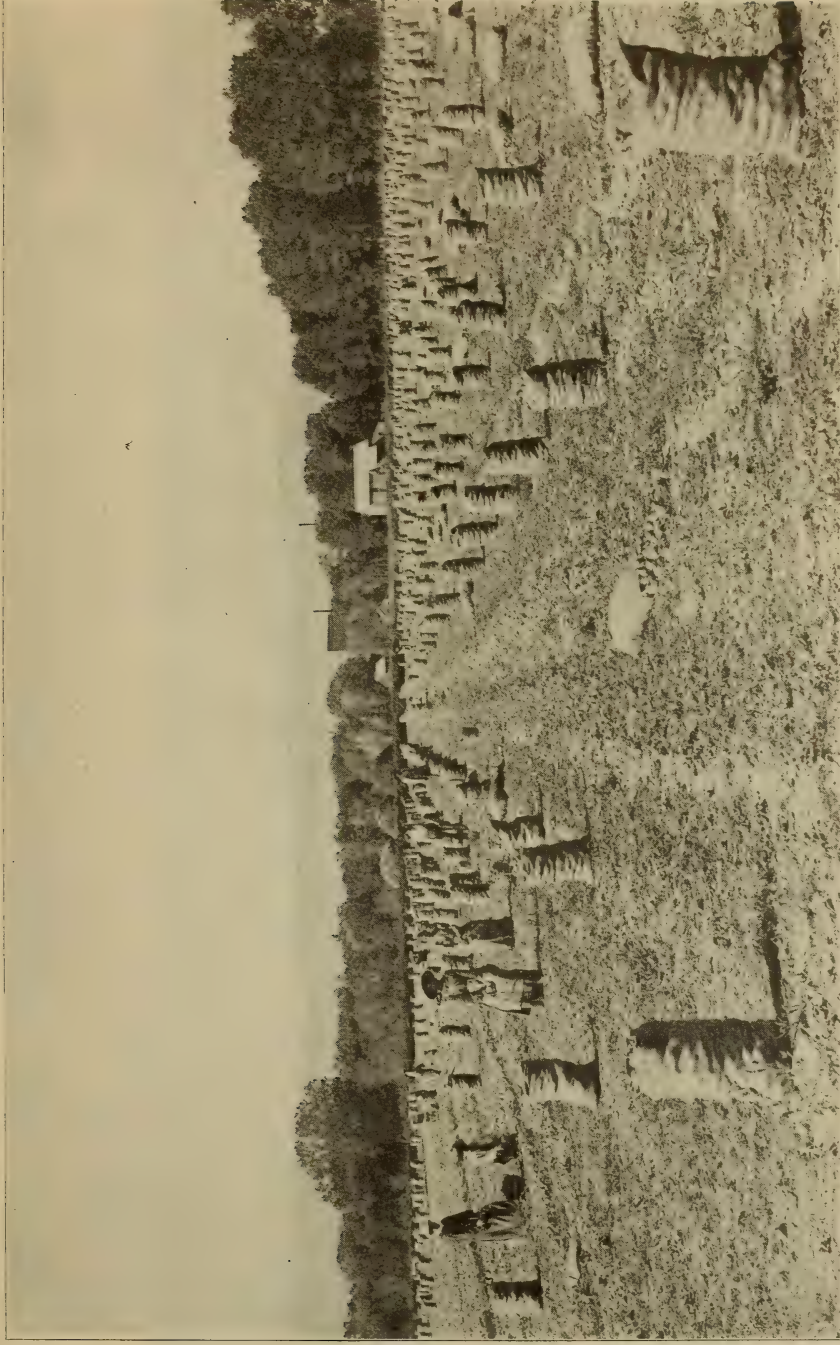
Wood ashes make an excellent fertilizer for the garden, but they should be saved and applied on top of the soil after it is plowed in the spring, as potash is one of the plant foods that may be washed too deeply into the soil to be reached by the roots of the garden plants, many of which are shallow rooted. Coal ashes contain no plant food of any kind, but if the soil is a little heavy they may be used with benefit to make it friable and more easily worked.

Liquid Manure to Force Vegetation.—There is not much opportunity to force vegetation in the open air in an extremely dry time unless it is done through this agency, or a supply of water for irrigating is at hand. Irrigation is in itself only a system of open air forcing, the water supplied acting as a solvent for the plant food in the soil as well as furnishing the needed supply for the plants.

The best way to force a garden is to cover the ground around the plants with very fine manure, gradually working this into the soil in the course of cultivation. If the rainfall is plentiful the beneficial result is shown at once. If the weather is dry the manure will not act so quickly unless the soil is soaked with water from some artificial source.

Where one is so situated that it is not feasible to buy concentrated fertilizers there is nothing better than liquid manure to take its place, and in many respects the liquid manure is better than any other form of plant food. If the weather is dry commercial fertilizers do not act at once, while a plant which is given liquid manure gets immediate benefit from the moisture and the plant food thus furnished.

Commercial Fertilizers almost always make a good showing when used to force crops into quick growth. On turnips, lettuce, onions and beets the effect of a light dressing of nitrate of soda is very marked after a few days, because the nitrogen tends to stimulate the growth of the leaves, and these in turn cause a strong root growth. The plants that root deeply do not get the benefit so quickly, but they are also benefited. Sulphate of ammonia, nitrate of potash and other nitrogenous fertilizers also furnish a supply of plant food for open air forcing.



Courtesy of Breider's Gazette

ONION CULTURE IN COLORADO.

The fruits and vegetables which are raised in Colorado are a surprise to those not familiar with the varied riches of that great State. Her exhibits in these lines at the World's Fair, Chicago, were a revelation to most people. The above field of fourteen acres produced 3,200 sacks of onions—enough to make one "weep" for joy at her signal success in this line.



United States Department of Agriculture

POTATO FIELD NEAR GREELEY, COLO.

This is one of the many evidences furnished by the United States that Irish potatoes no longer come mostly from Ireland. Strange to say, not a few people still think so, and few people there are who know that Colorado raises anything but gold and silver—to say nothing of potatoes

Any farm produces the material for liquid manure. Take any old barrel and fill it with fresh horse manure, packed down solid. Both heads should be taken out of the barrel, and it should be set on a sloping platform. Then pour in water until it begins to leach out at the bottom, where it may be caught in a trough or bucket and put around the plants. Half a pint of this liquid to a plant twice a week will furnish enough plant food to push it into fine growth and keep it in full vigor even in quite dry weather. Plants that are being fed in this way should have the soil about them stirred very often in order to prevent the formation of a crust and the evaporation of the moisture in the soil.

THE SELECTION OF SEEDS

It is impossible to raise any good crop from poor seeds. Usually when there is a failure in a garden crop that has been well cared for the failure comes from sowing seed of low vitality. No one should sow seeds that have not been tested, nor any that are not plump and fresh looking. In judging seeds by looking at them it should be remembered that a good many kinds are naturally thin or wrinkled or of a dried-up appearance, but a little examination will show whether the seed is in condition to do its best or not.

Testing the Seeds.—It is very easy to test seeds. Pick out ten of each kind and place them on a piece of damp cotton batting laid on a plate. Over the seeds lay another piece of batting and dampen it. Then set the seeds where they will be warm all the time, and in a few days they will germinate if they are good. Where this way of testing is used the top layer of batting can be turned back at any time without interfering with the seeds, and this allows the experimenter to notice how the work is going forward.

Cautions as to Buying.—As a rule it is best to buy garden seeds direct, the best seedsmen refusing to allow their seeds to be sold on commission in grocery stores and other similar places. Nearly all reliable seedsmen have their own trial grounds where seeds are carefully tested, but very few of them grow more than a dozen varieties of seeds. They can get better seeds by contracting with specialists—men who make the growing of a particular vegetable a special business.

Commission seeds are often returned year after year to be sent

out again until they lose their vitality. Get catalogues, which are offered very freely, and make selections of seeds, and you will be almost absolutely certain of getting a good crop of what you want if you do your part.

Where the Seed Comes From.—It is not generally known that a very large proportion of the garden seeds sold by seedsmen in this country is not grown by the seedsmen who advertise them, but by specialists residing, in many cases, across the ocean. For instance, only a few varieties are grown west of the Mississippi River. Asparagus seed is grown in New York and Michigan. Bush beans are grown in New York and Canada. Lima beans are grown for seed in California and New Jersey, and beets in New York, California and France. Brussels sprouts are grown in Long Island and France, and carrot seed is produced in California, Connecticut and France. Cabbage seed comes from Long Island, Connecticut, Germany and France, and cauliflower seed from Denmark and Holland. Sweet corn is supplied by Connecticut, New York, Ohio and Nebraska. Cucumber seed is furnished by Nebraska and New York. New Jersey produces egg-plant seed. Connecticut and Long Island supply kale seed. Lettuce seed comes from California; muskmelon from New Jersey and Nebraska; watermelon from Georgia, Kansas and Nebraska; onion from Connecticut, New York, Michigan and California. Parsley seed grows in England and France. Connecticut and France furnish parsnip seed. Peas are obtained from New York, Michigan and Ontario, and pumpkin and squash seed from Nebraska. New Jersey and France produce the pepper seed, and the latter country grows practically all the radish seed sold in this country. Spinach comes to us from Holland and France; tomato seed from New Jersey and Michigan, and turnip seed from Connecticut, New York and France.

GARDEN TOOLS

It does not pay anyone, no matter how small his garden may be, to try to work with poor tools. The most essential of all garden tools is the much despised hoe. With it, about all kinds of garden work may be done. Without it, it is impossible to have a good garden. To work with a good sharp hoe is a pleasure to anyone who likes any kind of work. With a poor hoe the task becomes burdensome pretty soon. A hoe that is kept bright and sharp is the handiest tool ever

invented, and with it more kinds of farm work can be done than with any two others.

Notwithstanding this, there is a cheaper way of doing much of the garden work than by using a hoe. If a garden has anything more than a quarter of an acre in it a good wheel hoe will pay for itself the first year and will last ten years; so it is a very profitable little machine to invest in. The original cost is from \$3 up, the \$3 kind being just as good for most purposes as the high priced ones.

A dibber should be part of the equipment of every garden. A good one can be bought for fifteen cents, or one can be made out of a crooked stick. This is used to make a hole in the ground in which to set such plants as need transplanting, like cabbage, beets, tomatoes, etc.

A steel rake is also indispensable in garden work, and a good one costs but fifty cents.

A spading fork with which to loosen the soil and dig potatoes completes the list of tools that everyone who grows a garden must have.

The total cost of the whole lot will be less than \$10, and such an investment will make garden work so much easier that the tools will pay for themselves in the increased crop that will follow better cultivation. Keep the garden tools always bright and in condition for the most effective use, and the garden will grow because it can be properly cared for with little labor.

Selecting and Caring for the Hand Hoe.—It is probably true that the neglect we notice in most farm gardens is due to the horror most men have of using a hand hoe in cultivating garden crops.

"In the first place very few men exercise any care in selecting a hand hoe. There is a great difference among hoes in the crook of the shank, and on this depends altogether the fitness of any given one for the man who is to use it. The hoe that works nicely for a tall man would be an uncomfortable one for a short man," writes an agriculturist.

In selecting a hoe choose one which is bent at the shank so as to allow the blade to "bite" into the soil just a little when you stand erect with the hoe resting on the ground the length of the hand in front of you, the handle being held in the hands in the position for work. If the shank is too straight the blade will bite too deeply, if it

is too crooked the blade will not enter the ground except the one using it gets into a position that soon becomes tiresome. Keep the hoe sharp by filing from the inside of the blade, leaving the side next the ground perfectly level. Keep the corners sharp and square as long as possible, and always clean the blade before putting it away.

When the hoe is bought buy a file to sharpen it with, and the first thing give it a good filing and then rub linseed oil on the handle until no more will soak in. If linseed oil is not handy any kind of oil, or even lard or tallow, will improve it in flexibility and durability. Take pains to get the oil or grease well worked in at the shank, so as to prevent water from getting in and loosening the handle. A hoe should be good for several years, and after it has been used for two or three years it will be better than when new, as the blade will become worn thin and it will be lighter to handle, while just as serviceable.

THE VEGETABLE GARDEN

Have you a good place selected for the vegetable garden next spring? Let us make a few suggestions: If you have a sandy patch about the place devote it to the production of vegetables. A sandy soil is better than any other for a garden, for the reasons that it is more porous and can be worked earlier in the spring and later in the fall; can be worked sooner after rains and is easy to take care of. The garden plat should slope toward the south in order that the full benefit of sunshine may be secured.

Lay the garden out in long rows so that cultivation may be given with one-horse implements.

When you have thoroughly harrowed the plat preparatory to seeding, and think it is the finest kind of tilth, go over it again to put on a finishing touch.

A comfortable seed bed, if we may use the expression, is essential to success in the vegetable garden.

Don't have the garden in the same place for any two consecutive years, but change it. A plat used continuously for a garden becomes infested with fungus diseases and insects.

Keep the garden soil full of humus if you would grow fine vegetables. A dead, compact, fine-grained soil is not adapted to vegetable growing. The soil should be porous and active.

A weed has no more business in a garden than a pug dog has in the farm home. Keep down weeds and grass. Permit nothing to grow in the garden save what you want.

The man with the hoe can profitably busy himself in the garden every morning before breakfast during the growing season. Keep the hoe sharp by frequent filing, and skim off the weeds rather than dig into the earth about the roots of the plants.

The vegetable seed should be standard varieties, tried and true. Plant them so as to have a succession of vegetables.

Gardening is a man's business, but if the housekeeper is fond of caring for plants the recreation from kitchen performances will be a most delightful one.

It is impossible to prepare and plant the garden as a whole and obtain best results. In planting farm crops we do not expect to sow the oats, and as soon as that is done plant the corn, because we know that corn planted so early in the season would rot in the ground, while if the sowing of the oats was to be put off until the soil was warm enough for the corn it would be too late to expect to get much of a crop of oats. It is the same in planting the garden. The ground may be prepared as early in the season as conditions will permit, but the planting of the seeds must be done at proper times according to the crop planted.

When to Plant.—As soon as the ground can be prepared in the spring it is perfectly safe to sow lettuce, and peas may be planted so early that the ground freezes afterward and still make a good crop, if there does not come a freeze after they are up.

Onion sets may be put out as early as the ground can be worked with ease, and onion seed sown at the same time. Cabbage and radishes should be put in very early for early sorts, and the last of all for late crops.

Bush beans, such as wax pods, must not be planted until all danger of frost is past, and the same is true of melons, while Lima beans should not be put into the ground until the soil is thoroughly warmed as deep as plowed.

For early potatoes it is safe to plant as soon as possible, as they are not particularly damaged even if the tops are nipped after they peep through the soil.

Cucumbers should be planted at the same time as melons, and

another planting be made along the last of May for pickles. Tomatoes should be planted in boxes in the house at any time after the beginning of March and from that on, so as to have plants coming on to be put in the garden when the weather gets warm. Where tomato plants are grown in boxes it improves their vigor to transplant three or four times before setting them in their permanent places.

Care should be taken to plant peas, beans for snap beans, sweet corn, radishes and lettuce at various times, so as to keep a succession of crops coming on for use.

How to Plant.—There is no danger of getting the soil of the garden too fine, and it should never be planted until it can be got into perfect condition. Rake it until it is smooth and fine, raking all lumps to one side or into little ridges in the garden. In planting pay no attention to these ridges or clods, but plant right alongside them. In a few weeks the clods will slack and be as fine as soil ever gets, and then it can be worked down to the level as the cultivation of the crop goes on.

Even in a small garden a wheel hoe pays, for it is an actual pleasure for a boy to operate one of them, and the boy who would almost faint at the prospect of going into a garden with a hoe—usually a dull one—is perfectly willing to use a wheel hoe where he can be both horse and driver.

Weeds and How to Get Rid of Them.—It is perfectly safe to say that the majority of farm gardens are infested with weeds. These weeds are robbers, pure and simple. They have an inherited capacity for sustaining life under unfavorable conditions, and when allowed to grow in the rich soil of a garden they grow to the exclusion of the less hardy garden plants. All weeds are ravenous feeders and send their rootlets in every direction, searching for the plant food in the soil. They require a large amount of moisture, and are able to absorb it in large quantities.

It is said that it requires 500 pounds of water to grow one pound of weeds, and it is not rare to find a single weed plant that will weigh a pound. Five hundred pounds of water is more than a barrel, and when we realize that all this might have gone to the support of useful vegetables instead of useless weeds we will, if good gardeners, take more pains to destroy these robbers of the soil.

Crowd Out Weeds with Turnips.—After the middle of summer is a

critical time in the garden. The farm crops are laid by and the fall work has not begun, and the farmer is very often somewhat negligent about watching the garden. Here is the beginning of trouble; for the weeds of this year produce seeds for next year's crop and for that of several years since weeds persist in retaining their vitality for several years.

The cheapest way to keep weeds out of a garden, or any other field for that matter, is to keep a useful crop growing on it as much of the year as possible. In the average garden the soil is rich, and the weeds grow vigorously. If every vacant space in the garden is hoed over, or cultivated and sown to turnips, the latter will spring up and smother the weeds. It is a comparatively small task to sow a big garden with turnips, and it is cheaper to hire a man to do this work than to let weeds grow up and seed the land with trouble and hard work for the years to come.

Harvesting the Vegetables.—The clear chilly nights of early October remind one that the frosts of winter soon will compel the harvesting and storing of the garden crops. Frosts that will kill bush beans and prevent the growth of new pods are not necessarily hard enough to injure the growing tomatoes, but will kill the foliage and help the maturing and ripening of the fruit.

But even green tomatoes should be gathered before too severe frosts, for they will not stand freezing without injury. Ripe cucumbers should not be left out too long, and because turnips will stand a hard frost and even one or two slight freezes, if allowed to thaw out while in the ground, it must not be forgotten that beets are different; they will not stand nearly as severe a frost and must be gotten in before the ground freezes.

Cabbage and turnips may be left out the latest of any of the vegetables usually put in the cellar. The late-sown lettuce may be left out and used till destroyed by freezing. Parsnips may be left in the ground till spring without any injury—in fact some think they are improved by freezing.

In harvesting the root crops from the garden that is cultivated only to supply the home table the common potato fork or a spade may be used. Beets, carrots, winter radishes and what parsnips are put in the cellar to add variety to the winter bill of fare would better have their leaves wrung off by hand than cut off with a knife, unless

care is used not to cut the flesh of the vegetable. Bruise as little as possible and pack in boxes or barrels with dry earth or sand as packing. The tops may be cut off of turnips, even with the fleshy part. These too should be packed as the other root crops to be at their best. Store cabbage the same way, cutting the head out with but few of the outside leaves. Besides keeping the heads hard and crisp it prevents any "cabbage smell" in the cellar. In fact a cellar filled with vegetables, packed as here outlined, is entirely free from offensive odor.

Before severe freezes take up a few parsley plants and set them in any old pails, boxes, or other receptacles that are handy and put in the cellar, and a supply of green for garnishing will be furnished till a new growth is had in the spring.

It is hard to find a more ornamental plant than a well-shaped, thrifty parsley plant, so if short of nice house plants one can put a few parsley plants in neat pots or dishes and have a thing of beauty and utility all winter long—though "the beauty" will be somewhat marred if the plant is used as a constant source of garnishing material. Do not be so careless as to let the parsley remain out of doors till all the plants are destroyed by frost. It is too pretty, and adds too much to the table adornment to permit such waste.

A garden is a good thing in summer. See if it is not even better in winter, when its products are safely housed in dirt in the cellar.

Growing Potatoes.—The three essentials for growing good potatoes are good soil, good seed and good culture. New hardwood timber land is best, clover sod is next. Clay soil should be plowed in the fall, so that the frost may act upon it during the winter. Plow clover sod as late as possible and harrow as soon as it is turned over, so that the greatest amount of moisture will be retained. Plant pure seed, for mixed varieties do not sell as well in the market and are not as good for family use, as they cook unevenly. Keep the seed in a cold place during the winter, where sprouting will not take place, for the first sprouts are the strongest and best. If they do sprout break these off before planting, so that a fresh, strong growth will start. Soak the seed potato in a solution of corrosive sublimate, two ounces of sublimate to sixteen gallons of water. Do not plant potatoes year after year on the same ground, for the germs of disease live in the soil. Cut the seed in two eyes. Whole tubers will give a larger

yield, but the resulting crop will not be uniform. Plant four inches deep in rows thirty-three to thirty-six inches apart, about sixteen inches apart in the row.

Drag the ground a few days after planting. Then harrow until the potatoes begin to appear above the ground. As soon as the row can be seen, go through with a cultivator and throw a light covering of soil over the rows. The next day go crosswise with a harrow. This will destroy weeds in the hill and give the potatoes a good start. Almost any variety of potatoes will run out, but this tendency can be prevented to some extent by selection. Plant as soon as possible in the spring after the soil is in fit condition for working.

On many farms there is a truck patch where potatoes and other vegetables are grown year after year. This is not a good plan. The location of the truck patch should be changed every year or two. In growing potatoes for family use it is best to grow the main crop at a considerable distance from the place where the crop of the year before was grown. If this is done there will be less liability to fungus diseases, such as scab, rot and blight, and also from the attacks of insects.

Potato Scab.—Scab is one of the worst diseases that can get started in potato land. The only way to combat it seems to be to grow other crops in the land for a few years. In fact this is true of the most of the diseases that trouble us in our crops, and is one of the best arguments in favor of a rotation of crops.

There is a widespread belief that if rye is sown on potato land and plowed under in the spring scab will not appear on the crop, but a careful experiment has shown that potatoes planted under such conditions do not yield as many bushels to the acre, and that the scab is more noticeable where the rye has grown than on the same land where this grain has not been plowed under. Treatment with corrosive sublimate did not prevent scab where the potatoes were planted on land that had produced scabby potatoes the year before.

In using formalin for the treatment of potato scab H. H. Lamson, botanist of the New Hampshire Experiment Station, recommends that one pint of formalin be added to thirty gallons of water, or one pint to fifteen gallons, according to the amount of seed to be treated. The tubers are immersed in this for two hours. Formalin can readily be obtained for eighty cents per pint or less. It is rather more expensive than corrosive sublimate.

The advantages of formalin are that it is not so violent a poison as corrosive sublimate, and is not so likely to injure the potatoes. Full strength formalin is very irritating to the eyes and nose, and would cause serious trouble if taken internally. Until it is diluted it should be handled with caution.

It generally pays to treat seed potatoes for scab, especially those varieties which are most liable to this disease, such as the Early Ohio. Unless so treated there is apt to be more or less scab in the potato crop even if clean seed be planted. Dissolve one ounce of corrosive sublimate in eight gallons of water and soak the seed potatoes in this solution an hour and a half. This treatment renders the potatoes poisonous.

Sweet Potatoes and How to Keep Them.—"I find the best way to keep sweet potatoes is to have boxes enough to hold all you wish to put away," writes Essex Spurrier, of Lyon County, Kentucky, "and put them into the boxes as they are picked up from the ground; keep them thus in all the handling they get. I prefer a sled to a wagon for hauling them in, as the jolting is liable to bruise them, and that is just what must be avoided. It is best to have the boxes all the same shape and size, but this is not essential—only a convenience in storing them away. If you have no suitable cellar, bank them somewhat like 'Irish' potatoes. Set two rows of boxes on the ground and then set a row of these midway, making something like a long heap. By putting another row on the ground, another on this and one beside it, and still another on top of all, the pile can be made as high as you wish; but I never use more than three rows. Put something to hold them off the ground a little. With corn-stalks, poles, boards or anything handy make a slanting siding, not touching any box, and cover with straw and earth, leaving a ventilating hole in the top which must be closed in cold weather. Roof all over.

"When cold weather approaches stop the vent hole more and more till it is as deeply covered as the rest of the pit. And remember that a foot of straw and three inches of dirt will do more toward keeping out Jack Frost than three inches of straw and a foot of dirt, and govern your work thereby.

"When the weather begins to soften towards spring open the vent hole an hour or so during the middle of the day, stuffing back the rags (which I find best for the gradual closing) and leaving off the

earth. Later on take out those you wish to keep till very late and pack away in barrels or boxes with perfectly dry sand between them so that one potato shall not touch another. Put away where they will not freeze or get damp and they can be kept till summer.

"In the matter of keeping sweet potatoes the most important thing experience has taught me is that it is best to bale them if I may strain a word to meet an emergency," writes Essex Spurrier, of Kentucky. "I have noticed for many years they began to rot most frequently where slight bruises occurred on the skin. To overcome this I took the job of handling them myself, so as to be sure they were handled carefully, but the spots appeared in spite of me. Then I obtained the idea of baling through the agricultural press from a practical farmer whose name has slipped my memory. Make boxes of any convenient size, not necessarily uniform, though that would be best. Provide ventilation at the bottom and slots near the top to carry them by. Take these boxes to the field, and, assorting as you go, put the potatoes into them, handling each as carefully as if it were a new-born baby. If there is rough ground to go over, I prefer a sled to haul them in on, though I don't know that this is necessary. These 'bales,' as I call them (for I make them of slats), are put into the cellar, pit, potato house or any place that will keep them from heat and moisture or frost, and the contents are never molested in any way till taken out for use, consequently they are never bruised, and it is so handy to take a box to the kitchen or haul to market. The first cost is something, but with proper care they will last a life-time."

Cabbages and How to Keep Them.—Cabbage is not a highly nutritious vegetable. As a matter of fact cabbage at a cent a head is very costly food if we consider its nutritive value, but this is not a good argument against its use. We are in the habit of eating too much concentrated food, and if we get into the habit of filling our stomachs with such vegetables as cabbage, turnips, string beans and other green stuffs we satisfy the appetite and are really better off than we would have been if we had spent the money for food of greater value in building up the system.

For late cabbage sow the seed where the plants are to grow, planting a dozen seeds in each hill and pulling out all but one after the plants are three inches high. Seed planted this way late in May

will make a good crop in the fall if planted where the soil has been made very rich with stable manure. Cabbage is a short-rooted plant, and at the same time a ravenous eater, and must be given plenty of material to feed on. Frequent cultivation will cause it to grow even though the weather be quite dry.

By the last of August the leaves will be broad and thick and when the cool nights come the heads will begin to form and harden until the last of October, when the cabbages should be pulled and turned upside down to allow the heads to drain before burying them, for the best way to keep cabbage is to bury it in the ground. If any head should show an inclination to burst open before the time for pulling this can be stopped by pulling it up enough to break most of the roots, or by cutting off the roots on one side with a sharp hoe.

After the cabbage heads have drained dig a ditch on some place high enough to insure good drainage during wet weather. Dig this ditch a foot wide and deep enough so that when the cabbages are set in it, roots down, the heads will lie on the surface, soil on each side. Now set the cabbages in the ditch, packing them as closely as possible and filling around the roots with loose soil. Place a little soil also under the outside leaves to hold them up, and then cover nicely with bright straw. After this, bank up carefully until the cabbages are buried with six or eight inches of soil over the tops, making the ridge smooth and compact by patting it with the spade. Cut a thick sod and lay along the top of the ridge, or lay a board along to keep the rain from soaking in at the top, and leave it there until the cabbages are needed for use. When kept in this way heads that are quite soft when put into the pit will fill out nicely, and the heads will remain hard and blanch until every leaf will be crisp and fit for use. It does not hurt cabbage to freeze once, but if allowed to freeze and thaw, the second freezing ruins it.

Another suggestion: Take an empty barrel—a salt or sugar barrel will do very well; dig a hole sufficiently large and deep so that a few inches of the barrel will project above the ground when it is put in position. Now bank the soil around the barrel so that it will be on a level with the top of the barrel and sloping in all directions from it. Cut the heads of the cabbage and put into the barrel so that the stalk part of the cabbage will be uppermost. So continue until the barrel is full; then cover with a lid which will turn water,

made of inch lumber. Cabbage buried in this manner in the fall will keep till quite late in the spring, and beside this it can be gotten at any time in the winter without any trouble. This is a splendid method of burying cabbage.

Black-rot in Cabbage, like the club-root, is hard to stamp out when once it is established in an area planted to cabbage. The spores of the fungus will retain vitality through the winter if permitted to go into the soil.

The infected heads in a patch should be cut out as soon as they show signs of the black-rot. Care should be taken to destroy such heads, or at all events to keep the rot from the soil. As in the case of club-rooted cabbage the black-rotted cabbage area should not be planted a second season. Change the patch promptly. Either club-root or black-rot is fatal to the crop. Plant in new places and dose the infected soil with lime.

Raising Cauliflowers.—A deep, moist clay soil is the best for cauliflowers, although good crops can be grown on any good garden soil. "I cover the ground two or three inches deep with stable manure and plow it in," says a successful gardener, "then harrow and furrow two and one-half feet apart. If I have well rotted the manure, I scatter it in the furrow and mix it with the soil with the cultivator, or if the manure is not at hand I set the plants, and in a few days apply around them a little commercial fertilizer that is rich in nitrogen. Vegetables of which the leaves or stalks are the edible parts need plenty of nitrogen in an available form. The plants are transplanted at different times from May until June. Cauliflower plants from the hotbed should not be set too early, unless they are well hardened, for they are more easily injured by frosts than cabbages. I do the most of the cultivation with the wheel hoe and horse cultivator. To insure success in a dry season one must have some means of irrigation. The plants should not stop growing at any time, hence the importance of irrigating them during a drouth or a dry season. Plenty of moisture is essential."

Tomatoes are usually regarded as about the easiest of the vegetables to grow. They will reseed themselves under favorable conditions and produce fruit year after year, although they invariably revert to the original form of a globular fruit about as large as a plum. They require a plentiful supply of moisture.

If the blossoms of the vines drop off without leaving a small tomato on the stem, this would indicate that for some cause there is no pollen in the flowers or that they are not fertilized. It is impossible to produce fruit of any kind from unfertilized flowers. The trouble may lie in the climate or soil, although that seems hardly probable if the vines grow luxuriantly. If there are no bees of any kind in the neighborhood it is probable that the flowers may not be fertilized. In this case as soon as the pollen is ripe, which is when it shows in the form of a fine powder in the center of the flowers, take a fine brush and gently brush the powder over the flowers.

Tomatoes should be planted in very rich soil and set pretty deeply in the ground, and during dry weather do much better if watered once a week. If they do not do well try severe pruning of the vines. As soon as a bunch of flowers have opened, pinch the top of that branch of the vines and pinch out the sprouts that will start from the axils of the leaves. Keep the vines pruned to two principal stalks and do not allow them to grow more than three or four feet high. Don't be afraid of hurting the vine by pinching off branches. To do this is to force the roots to send all their sap up the branches left, and this tends to increase the size of the fruits. The weather is never too hot nor the soil too rich for tomatoes.

Rust is the finest fertilizer for tomatoes; old pieces of iron or old stove pipes placed just beneath the surface around tomato roots make them vigorous and fruitful. Ashes, not too much, are equally good. Bones, burned and ground, or beaten up, answer the same purpose.

The ripening of tomatoes may be hastened considerably by tying the plants to stakes and pruning off the sprouts which come up around the base of the plants, the object being to get fruit from the first blooms and not allow the lower branches, or sprouts, which come up later, to produce fruit. By keeping off these sprouts the entire strength of the plant is thrown into the upper part.

In order to carry out this plan successfully the seed should be sown in a hotbed sometime in March, and the plants set in the field as early as it is safe, selecting a piece of ground that is not too rich. A sandy soil is all right, but the highest portions or knolls are better than lower, richer lands. The plants should be tied to stakes at once, and as they grow the tying should be repeated. It is not necessary

to pinch the tops of the plants in any way, but as they grow up keep them tied to the stake, which needs to be about five feet high.

Ordinary tomatoes can be grown in this manner from one to two weeks earlier than if the plants were allowed to fall over on the ground. Early varieties should, of course, be selected, and one of the best for this purpose is Dwarf Champion, but the Advance, Ruby and several others are suitable also.

The fungus disease causes great losses to tomato growers, and of late years is spreading very rapidly. Of this disease Professor Lodeman says: "The fungus generally attacks tomatoes when they are over one-half grown. The blossom end is attacked, the appearance of a small black spot being the first indication of the disease. The spot increases in size until fully half the tomato is destroyed. The diseased part is black and shrunken and generally extends square across the tomato from side to side. The warm, moist weather of summer appears to be particularly favorable to the development of this parasite.

"Treatment:—Very thorough spraying with Bordeaux mixture or other copper compound is perhaps the best preventive. If possible a dry location should be selected for growing the plants, and the stems should be kept free from the ground."

Onions.—A fine crop of onions can be grown on any soil that will produce a good crop of corn unless it be a stiff clay, very light sand or gravel, or certain varieties of muck or swamp lands, in which they invariably grow "necky," and cannot be made to ripen down well, while other muck soils give immense crops of the finest quality. The difference is generally, though not always, due to drainage. Muck lands must be sweet and well drained in order to raise good onions. Ordinary swamp land will not do, and even in the best of muck the first crop is apt to be soft and necky.

"I always prefer a rich sandy loam, with a light mixture of clay," writes H. W. Buckbee, of Rockford, Illinois. "This is much better if it has been cultivated with hoed crops, kept clean of weeds and well manured for several years previous, because if a sufficient quantity of manure to raise an ordinary soil to a proper degree of fertility is applied at once, it is likely to make the onions soft.

"There is no crop where a liberal use of manure is more essential than in this. Even on the deep black muck land of the great West

manure is essential to a good crop, and not only is the quantity but the quality of the manure used of the greatest importance. If it is too rank it is sure to make soft onions with many scallions. It should be well fermented and shoveled over at least twice during the previous summer to kill weed seeds. Of course when it is not possible to secure manure one must resort to commercial fertilizers. I prefer the ground bone to any other, but large crops are raised by the use of superphosphates.

"Preparation of the soil is one of the main points. Remove all refuse of previous crops in time to complete the work before the ground freezes up and spread the composted manure evenly at the rate of twenty wagon loads per acre. This should first be cultivated in, and then the ground plowed a moderate depth, taking a narrow furrow in order to thoroughly mix the manure with the soil. Carefully avoid tramping on the ground during the winter.

"Cultivate or thoroughly drag the soil with a heavy harrow as early in the spring as it can be worked, and then in the opposite direction with a light one, after which the entire surface should be raked with steel hand rakes. It is impossible to cultivate the crop economically unless the rows are perfectly straight. To secure this, stretch a line along one side fourteen feet from the edge, and make a distinct mark along it; then having made a wooden marker, something like a giant rake, with five teeth about a foot long and standing fourteen inches apart, make four more marks carefully drawing it with the outside tooth in, and the head at right angles to the perfectly straight mark made by the line. Continue to work around this line until on the third passage of the marker you reach the side of the field where you began; measure fifteen feet two inches from the last row, stretch the line again and mark around in the same way. This is better than to stretch a line along one side, as it is impossible to prevent the rows gradually becoming crooked, and by this plan we straighten them after every third passage of the marker.

"Sowing the seed should be done as soon as the ground can be gotten ready, and can be done best by a hand seed drill. After trials of many seed drills I find the Iron King preferable. This should be adjusted carefully, testing it by running it over a board or cloth to sow the desired quantity of seed and about one-half inch deep. The quantity needed will vary with the soil, seed used and the kind of

onions desired. Thin seeding gives much larger onions than thick. Four to five pounds per acre is the usual quantity needed to grow large onions.

"Give the onions the first hoeing, just skimming the ground between the rows, as soon as they can be seen the length of the row. We find the McGee cultivator the best by all odds. The hoes of this cultivator allow the earth to pass over the blades without moving it out of place. Hoe again in a few days, this time close up to the plants, after which weeding must be continued. This operation requires to be very carefully and thoroughly done. The weeder must work on his knees astride of the rows, stirring the earth around the plants in order to destroy any seeds that have just started. In ten days or two weeks they will require another hoeing or similar weeding to the last, and two weeks later give them still another hoeing, and if necessary another weeding. If the work has been thoroughly done at the proper time the crop will not require further care until ready to gather.

"As soon as the tops die and fall the bulbs should be gathered in windrows. If the weather is fine they will need no attention while curing, but if it is not, they will need to be stirred by simply moving them slightly along the row. Cut off the tops when perfectly dry about half an inch from the bulb, then after a few days of bright weather the onions will be fit to store for the winter unless desired for immediate sale.

"One of the most popular methods of keeping onions is to spread straw to the depth of eighteen inches upon the barn floor, scaffold or garret; upon this spread the onions six to ten inches deep and cover with two feet of straw. If in good condition and sufficient depth of covering is used, they will keep in fine condition till May.

"A cool, dry cellar of some out-building, barn or carriage house will be found excellent for keeping onions if it has windows for ventilation. The cellar of a dwelling house is usually too warm. They should be spread on scaffolds about six inches deep with room enough between the boards for the air to circulate. Upon approach of cold weather close the doors and windows and keep the temperature just above the freezing point. With proper care they can be kept from freezing, and will come out nice and sound in the spring."

Lima Beans.—Those most delicious members of the bean family

are pretty badly neglected, usually because they require poles upon which to climb, and the preparation of one hundred or two hundred bean poles is no slight task for a busy farmer. It is a pretty good plan to select the poles in the winter and have them ready to set in the hills at the same time the beans are planted. When the crop is harvested the poles may be tied in compact bundles and put in a dry place for the next year, and it is surprising how long they will last. In case poles are not to be had on account of lack of proper timber, common plastering laths are very good substitutes. A good plan is to plant the beans in each hill at the corner of a square a foot across, putting one bean in each corner and sticking a lath down beside it. Then draw the tops of the laths together and tie them securely, making a pyramid when the vines have grown to the top. As the vines reach the top pinch them off, and they will bear just as many beans, throwing out side shoots to make up for the loss of the top. Some sorts are of short growth and do not make very long vines, while the dwarf Limas do not make vines at all and do not need poling.

Limas should be soaked over night before being planted, and then set into the soil with the eye down, the beans standing on edge with covering an inch deep. They should be planted in very friable soil, as a little crust over the top will prevent them coming through the ground in proper shape to do well.

Do not be afraid of getting soil too rich for Limas, and do not plant them until the soil is thoroughly warmed, as they are natives of a hot country and love plenty of hot sun from the time they come out of the ground.

The Castor Bean has been known from the most ancient times. It has been found in Egyptian tombs more than 4,000 years old. It was known to the ancient Greeks, Romans and Hebrews. Some suppose it to be the plant that is spoken of in our translation of the Bible as the gourd. The Hebrews esteemed it as a source of lamp oil, but did not know of its medicinal qualities. In India, where it is a native, it is a perennial, but from long cultivation in colder climes it has become an annual.

India and the United States are the largest producers of castor beans. There are numerous varieties, but the one known botanically as *Ricinus Communis*, or the common castor bean, is almost exclusively used.

Like all oil-bearing plants the product of oil is greatest where the weather is warmest; but the castor bean may be grown almost any place where maize will thrive. However, it is not profitable in the northern half of the corn-belt. Considerable quantities of beans are grown in Illinois, and the southern half of Missouri would probably be warm enough to make it profitable. About forty-five per cent. of the weight of the seeds is oil in the northern limit of its profitable cultivation, while in the tropics as much as seventy per cent. of oil may be obtained.

The castor bean requires a very deep and fertile soil, well supplied with nitrogen, potash and phosphoric acid, and unless it is planted in virgin soil the land must be well fertilized. The soil must be neither too light nor too heavy, too close nor too porous. A sandy or clay loam is best, and the soil must be deep, friable and well drained. The best corn land makes the best castor bean land.

The castor bean may follow any clean crop, or it may be grown on the same land for several years providing enough fertilizers are used. A mixture made of 500 pounds of cotton seed meal, 1,000 pounds of stable manure, well fined, and 500 pounds of any good superphosphate will contain all the elements demanded by the castor bean. Of this mixture from 1,000 to 3,000 pounds to the acre should be used, according to the richness of the soil and the amount of fertilizer used the previous year.

Soak the seeds twelve hours in lukewarm water and plant two seeds in a hill, covering one-half inch, the hills to be six feet apart each way. When three or four inches high pull out the weaker of the two plants, leaving but one to grow.

The castor bean will not stand deep cultivation or hilling up. Shallow surface cultivation is the only proper treatment, using such a cultivator as the Tower and finishing with hand hoes.

As soon as the seed pods begin to turn brown the spikes are cut off and exposed in the sun until the seeds part freely from the pod. The different spikes ripen at different times, so the field must be gone over several times, gathering each time those in proper condition. The yield is from twenty to twenty-five bushels to the acre, and the crop is somewhat more profitable than corn at common prices.

Rhubarb or Pie-plant.—"We are pleased to notice that the very valuable culinary and medicinal vegetable known as rhubarb or pie-plant

is coming to be generally cultivated," writes B. W. Jones, of Spottsville, Virginia. "Among all the fruits or vegetable crops for early spring there is none more deservedly esteemed than this. To say nothing of its medicinal uses, nothing of its place as an ornamental plant, and confining our remarks to its use as an edible alone, there is nothing that we are acquainted with—no fruit or vegetable—that surpasses it for pies, sauce, etc., for early spring. Coming on even before strawberries are ripe it excels that delectable fruit for tarts, flavoring and sauce. It surpasses the tomato in medicinal action on the system, and for its peculiarly agreeable sweetness and piquancy of flavor. Nothing makes a finer sauce when stewed alone, or imparts a richer touch to canned or dried fruit when used as a flavoring. A most delicate and agreeable cordial is made from it. And preserved with a liberal supply of its own sauce, or sirup, along with it, it makes excellent medicine for winter use, when one is suffering with cold, sore throat, influenza or any form of pulmonary disease. Every family garden should contain a bed of from fifty to a hundred plants of kitchen rhubarb, this number being ample for the largest demands of a large family. It may be raised from seed or from cuttings of the root. The cuttings grow as readily as an Irish potato, even pieces without any bud apparent taking root and growing. Far north it should be planted in the spring. At the south the sets can be put in the ground in November.

"The place where the rhubarb is to be set should be deeply dug over and mixed with an abundance of fine manure. Then get roots and divide them to one or two eyes and set them with the tops an inch below the surface. They will not need to be reset for three or four years, and all the care necessary is to cover them with coarse manure in the fall and rake this away from the crowns in the spring.

"Rhubarb may be grown from seed the same as other plants, but it takes two years for it to mature so as to furnish sauce in early spring. If seed is sown it is best to select Victoria, as it comes true from seed, while most varieties may or may not come true. Drill the seed in a row, and as the plants come up, thin them to four inches apart, and as soon as these begin to be crowded, set where they are to stand, giving each plant four feet of space. Keep the weeds down in spring until the leaves begin to shade the ground. If the plants are not taken up about once in four years they get root-bound, and

do not produce as large stalks as they will if taken up and divided so as to give each plant plenty of room."

In regard to the growing of rhubarb, O. C. Burch, of Fairbury, Nebraska, writes as follows: "I have been successful in growing nice, large, juicy stalks by employing the following method: I grow plants from seeds, or divide large old roots. I dig a trench about two feet deep and two feet wide and about twenty feet long—the length can be regulated by the amount desired. A row twenty feet long will be sufficient for a large family and some to spare for the neighbors. I put in this trench about fifteen inches of well-rotted stable manure, or better yet, hen-house manure. Then fill the trench level with good rich soil. Then place in the trench one row of good, strong roots of a large variety, twenty to twenty-four inches apart. I cultivate and irrigate thoroughly."

Fred W. Card, of the Rhode Island Experiment Station, offers the following means of indoor cultivation: "Can you spare two or three hills of rhubarb from the garden? There ought to be plenty there, so that they will not be missed. If so, go and dig up these hills, or even one large hill at the time when the ground freezes. Let it lie on top of the ground, exposed to the cold until thoroughly frozen, then take it to the cellar, banking a little moist earth around the roots. Some of the weaker crowns and roots may first be trimmed away, since they will not produce good stalks. If there is a furnace in the cellar, long before spring comes these hills will produce fine stalks. They will waste no energy in extra leaf surface; nearly all will be bright, crispy stalks.

"If the cellar is too cold and they are slow in coming, a barrel may be set behind the kitchen stove, one hill placed in this and a canvas thrown over the top. If the appearance of a barrel in the kitchen is objectionable, a more pretentious cabinet may be made of lumber, which will answer the same purpose. Simply see that the soil is kept moist, and soon there will be rhubarb ready for the harvesting. That which remained in the cellar will be along a little ahead of that outside, even if the cellar is cool, and in either case will repay the slight effort needed to get it."

Asparagus.—At one side of every farm garden should be found a bed of asparagus and one of rhubarb. Asparagus and rhubarb both require about the same care in the way of heavy fertilization, and

both remain in the ground for several years when once planted. Once established, all it is necessary to do is to work manure into the ground every spring and the crops will come with unfailing regularity.

It is a mistake to set asparagus plants too deeply when they are put in their permanent places. It has been found that those set shallow not only produce as much asparagus, but that it matures earlier than that growing from deeply set plants. This is not only true for the first few seasons, but continues as long as the plants are in use. The vigor of the plant is the same in both cases, so there is no advantage in deep setting.

Beginners are almost universally recommended to sow salt on the asparagus bed in the spring and work it in the soil that the plants may grow more thriftily and the "grass" more tender. A careful experiment along this line developed the fact that salt does not do any good, while the use of a little too much is injurious. Asparagus will stand any amount of manuring, and this is all that is necessary to produce the best crops.

Horseradish.—This is so persistent that it sometimes comes to be regarded as a weed almost, and yet there are a good many farms on which it cannot be found. A few little roots stuck out in a waste corner will furnish a supply during an indefinite number of years. As a relish there is nothing better than horseradish. An old doctor once said, the man who ate plentifully of horseradish would escape many of the ills that come with warm weather to the man who works hard and is careless about his health. He said its good qualities were not at all appreciated as they should be, and that every family should have it on the table during the winter and spring.

The Raising of Celery.—Every farm garden should produce enough celery for the use of the family during the winter. The great trouble about celery growing has been that farmers would not take the trouble to do the necessary work of banking up the plants, preferring to do without. The new system of making the soil very rich and setting the plants a foot apart each way dispenses with banking. In this system the soil is dug out for six inches over the entire plot to be set in celery. This leaves a depression, the bottom of which is dug and fertilized thoroughly. The plants are then set in at the proper time and allowed to grow without being banked up, and they soon cover the ground. Before severe frosts come the celery is dug

up and put in the cellar, the roots being set in garden soil on the cellar floor, and the plants set closely together. In the darkness of the cellar they soon blanch and become white and brittle and as good as any.

If there is no cellar under the house the plants may be set in a trench in a dry place out of doors and carefully banked up with earth to keep them from the weather, where they will soon become fit for use. In taking up the celery, care should be exercised, as it must be taken up when the stalks are dry, or they will rot when packed together in the cellar or pit. To grow celery in this way is no more trouble than to grow potatoes, and enough for one family may be grown on a small plat.

In Michigan, one of the greatest celery states of the country, the seed is sown about the last of May or first of June, favorite varieties being Golden Self-blanching and Giant Pascal. After the first of July celery requires special attention. Where it is too thick in the seed drills, thin it out and give sufficient room for that which remains to become sturdy if desired.

The thinnings may be transplanted into frames with a north aspect, or some position where they will have a slight shade. If pricked off in a bed prepared of old manure and soil they will grow rapidly and make good plants for lifting with balls of earth afterwards. Where the plants are strong enough they may be planted for the early crop. If they are drawn out of the seedling bed the roots should be puddled, and they ought to get a little shade for a few days until they start to grow. In the case of plants that have been pricked off into a nursery bed they can be taken up with balls of earth and will suffer but little by the change. When the plants have started to grow, a top dressing of manure will be beneficial.

For private gardens, and especially for early crops, and where the plants have to be transplanted, trenches are perhaps the best, as they give the grower the best chance of economizing water and keeping the plants cool and moist at the roots. The trenches may be dug out twelve inches in depth and sixteen or eighteen inches in breadth. Put three or four inches of good manure in the bottom and cover this with three inches of soil. It is more economical to plant a double row in the trench at about ten inches from row to row and six inches apart from plant to plant in the lines. The trenches may

be three or four feet deep. The system commonly preferred for early celery is that of producing it in the seed drills. It would be hard to over-water celery during the summer weather. It should never be forgotten that water is the principal factor in successfully raising it.

Pumpkins.—In the corn-field of a few years ago the autumn revealed a crop of golden yellow pumpkins, but for some reason they are not so often seen of late. One cause for this is perhaps due to the fact that a better understanding of agriculture has taught farmers that whatever goes to the crop of pumpkins is practically lost to the corn when the two are grown together.

That pumpkins are a paying crop will not be disputed by anyone who has ever fed them to live stock. They are rich in sugar and contain elements that are most beneficial to animals, whether they be cattle, dairy cows, pigs or sheep, and they are so easy to raise that it seems strange that more of them are not grown.

It is advisable to raise pumpkins in a lot by themselves instead of planting among corn in a field. They should be planted in hills eight feet apart each way and not more than three vines should be allowed to stand. It is well to plant a dozen seeds in each hill and let all the plants stand until danger from the cucumber beetle is past, after which they may be thinned. The land should be made rich with good manure and the cultivation should be such as will keep down weeds until the vines cover the ground, after which they will take care of themselves.

Turnips.—While occasionally under favorable conditions a good crop of turnips may be grown by sowing as late as the middle of August, generally the best results will be secured by sowing not later than the middle of July. Have the soil in a good tilth and reasonably rich, so that the plants may get a good start to grow before the weather gets too hot and dry. One advantage gained in raising turnips is that, if they cannot be eaten or sold to advantage, they can always be profitably fed to stock.

Salsify, or Oyster-plant.—Salsify, or oyster-plant, as it is often called, is one of the most palatable vegetables grown if cooked properly. Comparatively little of it is grown, however, when we consider its excellent quality as a vegetable. Every garden, however, should have a row or two of it, so that those on the farm may enjoy oysters grown

right in their own garden. In early November salsify is harvested and stored away for winter, either in suspended crates or ventilated boxes in the cellar; it may also be buried in a pit the same as apples and potatoes. It may remain in the ground through the winter and in spring be suitable for table use; but it is much more satisfactory to dig it and store in a cellar where it can be used as wanted.

Salsify belongs to the parsnip family, and is shaped much the same as that vegetable, growing like the beet, carrot, radish and parsnip, the seed being sown at the same time. A packet of seed will grow enough salsify to supply one family and may yield a surplus, as it is very easily grown and cultivated, nearly every tiny seed making a large tuber.

Cultivation of Mushrooms.—In the northern and middle states of this country it is a necessity to utilize cellars for the culture of mushrooms. In the southern and Pacific states sheds above ground will answer the same purpose.

Cellars built of brick should be given the preference, inasmuch as walls of brick and stone will enable us to better control the temperature of the culture. The most satisfactory warmth is 68° Fahrenheit, though a variation between 60° and 70° is within the limits of practicability. The temperature of the manure beds may go as high as 80° without causing apprehension for the growth of the spawn. When sheds are in use it is advisable to apply to the lumber; boards and posts neither coal tar nor carbolineum, as local smelling oils easily and injuriously affect the microscopical mushroom spawn. Draught or any sudden change of temperature has also a damaging effect upon the young spawn. As to light, absolute darkness is not a necessity, a mild twilight being rather preferable.

The shape of our beds may be made according to the disposal of space. If there is want of room make them in layers about twenty-eight inches apart upon wooden shelves, either entirely flat or with a slight incline, the width being adapted to a convenient cutting of the crop. The depth may vary from eighteen to twenty inches. "If space is plenty I recommend the French style of beds," says a recognized authority, "the base three feet wide, length as wanted, with a conical surface, height in the center about two feet ten inches, upper width two feet six inches. Such beds are best made upon even ground or in cellars upon cement or brick as the case may be.

"The material for the beds must be fresh horse manure. Avoid all exposure to sun or rain. Pile to a height of about four feet, with a width of like dimensions. All coarse bedding is to be carefully separated. To give the bed a firm consistency use the back of a spade freely and vigorously. After about ten days turn the bed—that is, tear down and rebuild—by using the inner manure for the outer coating and bring the outer cover to the center of the pile. This is to be renewed after a lapse of another ten days until a thermometer, introduced in the middle of the pile, indicates a heat of 90° Fahrenheit. It is advisable to use the thermometer freely during the process of manure fermentation. A rise of the same to 150° will compel us to open the pile somewhat, so as to avoid an overheating and consequent burning of the bedding material.

"An average of three weeks is generally sufficient to make the manure ready for the use of the beds. Bear in mind that during the process of fermentation, places which show a tendency to too much dryness have to be kept moist by slight applications of either water, or better yet, the regular manure secretion. If the manure turns out to be of a soapy consistency or affected with a moldy smell our work will have to be renewed with a fresh lot of material, as manure in the above condition is unfit for mushroom cultivation. Well-prepared manure is almost odorless.

"We now put our ready material into the prepared beds of either cellar or shed. In purchasing the seed—spawn—we have the choice between the local and the imported English or French. The English spawn is in the market in the form of pressed bricks, as is most of the local. It is two inches thick by twelve inches and six inches in length. The French spawn is, as a rule, to be had loose in packages of four pounds. My own experience inclines me to give the French seed the preference, it being the more productive. If economy is a necessity, then the seed of the wild mushroom, gathered in season, will do as well. In the first month of the year a warm shower will greatly cause legions along the roadside to break the soil.

"The characteristic feature of non-poisonous mushroom is the ease and even way with which one may loosen the skin. In seeding use pieces of about the size of a duck egg and about ten inches apart in holes three inches deep.

"It is well to subject the spawn to a slight moistening eight days

before planting. Close all holes carefully and firmly after seeding and spread an inch layer of not too heavy soil over the beds. Try to keep as nearly as possible a temperature of 69° Fahrenheit in your cellar, and likewise keep a careful guard that your beds may not become too dry.

"In about twenty days, more or less, you will see your spawn begin to penetrate the manure bed with a multitude of fine, snow-white fibrous roots. You will now add another inch layer of good soil firmly pressed upon your beds. After a lapse of a further twenty days or so the first mushrooms—so-called buttons—will begin to make their appearance. In cutting the mushrooms for market be careful to refill all openings with bed material, with as little disturbance of your growing spawn as possible.

"A well prepared mushroom bed will retain its fertility from six to ten months. By applying once in a while a solution of saltpeter water, one ounce to about twelve quarts of tepid water, you will be enabled to continue your harvest for a considerable length of time."

Salad Vegetables.—Besides the vegetables usually grown in the kitchen garden which are peculiarly suited for use in salad-making or garnishing, such as beets, tomatoes, lettuce, parsley, etc., a corner devoted to other plants, useful as greens or in salads, will add much to the enjoyment coming from growing one's own vegetables. Many of the sweet herbs, such as thyme, sweet basil, summer savory, and sweet marjoram, are used for seasoning, and may be grown in a very small space.

Chervil, much used in salads, is grown like parsley. Soak the seeds for several hours in lukewarm water and sow early in shallow trenches a foot apart. As the plants grow, thin them out to four inches apart. The seeds of borage, the young leaves of which are used in salads or boiled like spinach, are sown at intervals of ten days from early spring, in light soil, and are transplanted when six weeks old to beds, setting the plants a foot apart. As the young leaves only are used, the soil must be good to induce a quick plant growth. Burnet, largely used in salads and soups, is readily grown in any soil by sowing in early spring in rows, thinning to four inches. Kohlrabi is easily grown in any good garden soil, and makes a delicious salad.

Swiss chard is really a beet, but the leaves are superior to the ordinary garden beet leaves for salad purposes. Sow early, rows

about a foot apart, and keep the ground free from weeds and well cultivated, which will increase the tenderness of the leaves.

Spinach is popular both for boiled greens and as a salad, mixed with chervil, onions, if desired, and other vegetables. It should be sown early, in rows a foot apart, sowing the seed every two weeks, and as the plants grow, thin them out for use on the table. If the seed of the New Zealand variety is sown, the plants may be had for use all summer.

Besides lettuce, which, of course, remains our mainstay for winter salads, have some cresses with which to add something of pungency and spicy flavor to the former. Ordinary cress and watercress come equally handy for this purpose, and both are easily grown. The ordinary cress may be grown in large flower-pots or in boxes, without much trouble. Fill the box or pot with rich soil, and sow seed rather thickly. In a few weeks you will have quite a picking, or rather cutting. Keep a few such pots or boxes growing, by sowing seed every week or so.

SMALL FRUITS, OR BERRIES

Fruits sometimes sell at a low price, and do not pay; but the same may be said of all crops. The farmer, however, is usually not a fruit-grower, except of apples; and strawberries, raspberries and blackberries are seldom cultivated. Whether grown for market or not, such fruits should be produced on every farm by way of variety and for home use. The luxuries can be produced more easily by farmers than can the regular crops of grain. It takes two or three acres of wheat to buy the produce that can be derived from a quarter of an acre of small fruits and vegetables.

The Strawberry Bed.—Every farm should have its bed of strawberries. There is no fruit at any season so timely and delicious as the strawberry, supplying at their season just the acid and fruit salts needed as we enter upon the hot weather. Prepare a plat, of any good corn land that drains quickly, for five or seven rows four feet apart, long enough to set one hundred plants in each row, two feet apart. Plant in April of each year in the order named: one hundred Michel's Early, a sexual; one hundred Bederwood, a bi-sexual; one hundred Brandywine, a bi-sexual; one hundred Marshall, a bi-sexual. Here, in the order named, are early, medium and late varieties, which,

in ordinary seasons, will give strawberries for a month, three times a day, for the table, and twice as many more to sell to your groceryman in exchange for groceries.

Cultivate sufficient to keep down the weeds, allow the plants to fill the rows about eight inches wide; after the required width in the row is attained, cut away all runners, and late in the fall spread a light coat of well-rotted cowyard manure over the plat. After the ground has become frozen spread over the rows a thin layer of old bleached straw, and do not rake to the center until freezing or frosts are over in the spring.

When the picking season is over, mow and rake the patch and cultivate thoroughly, and you will get a fair crop the next year; but don't forget to plant each year, in April, a new plat, taking strong vigorous runners from the last year's patch. For about three dollars you can get material for one thousand boxes, ready to tack together, which will supply you several years.

If the strawberry bed, set last spring, has got the start of you, cultivate between the rows until the ground is as mellow as an ash heap and every weed dead. File your hoe, and go at the weeds in the row between plants. Limit the runners to four or five to the hill, or, if you want big berries, cut off and keep off every runner. Let no weeds grow, and manure with wood ashes, hen manure (in moderation), pig manure or sheep manure, as close to the hill as you dare. Remember that strawberry plants do not root deep or wide. The plant food you supply must be close and near the top. If you cut off all runners and depend on the main plant to bear fruit, you will get fine, big fruit, easily picked, and there will be nothing to prevent clean culture. In fact, the laziest way to grow strawberries is to plant three feet apart each way, cut off all runners, keep the bed clean by horse power, make it rich, and let it bear as long as plants are thrifty, four or five years probably. Too many runners and too much grass make small berries and weak plants.

Planting of Potted Strawberry Plants.—Within a few years the planting of potted strawberry plants has very largely increased, because they produce a full crop the next spring after being set out in the fall. The method of producing them is to plunge the flower-pots, of the size florists call thumb pots, into the soil along a row of strawberry plants. These are filled with rich loam, and as the runners develop

plants they are set over the sunken pots and a little soil drawn over them, so the roots that start out will grow in the little pot. When they are taken out the pots are taken with them, and they may be shipped a long distance and reset without feeling the shock of the change. This gives them a chance to make a large growth in the fall and be ready to produce a full crop the following season. They are usually sold at about five times the price of the ordinary plants, and they are worth the price, as the use of them saves a year's waiting and work.

Raspberries.—The raspberry is one of our best and most easily grown berries, and new plantations should be started on every farm where a good patch does not already exist.

The red varieties are liable to be winter killed. Their sprouting proclivity is another serious objection found to them by the average farmer who gives his berry patch little cultivation. By treating the sprouts as weeds, we find them very little trouble. Turner and Cuthbert are perhaps the best red varieties.

The black-cap varieties are propagated from the tips, which, like all other nursery stock, should be planted in the spring as soon as the ground is in shape to work. The rows should be about seven feet apart, and the plants half as far apart in the rows. The ground should be fertile, deeply plowed, preferably in the fall, and thoroughly loosened and pulverized before planting. The land should lie as level as possible, as it is very difficult to cultivate a berry patch on a side hill.

A furrow may be opened and the tips set therein, or they may be planted in holes thrown open with a spade. The lower end of the roots should be about six inches deep, but only an inch or two of loose dirt should cover the sprout. The soil over the roots should be pressed down very firmly.

Some say a tip will not grow if the sprout is broken off; but that is a mistake. Most of the tips sold by nurseries have the sprouts broken off, as it is almost impossible to handle them without breaking the sprouts, yet very often such tips are planted and grow well. A raspberry tip is a good deal like a potato in this respect, new sprouts taking the place of the ones broken off. Such mutilation is an injury, of course, and puts the plant back several days.

Like all other fruits, the raspberry should have frequent shallow

cultivation throughout the growing season. A horse hoe and one section of a lever harrow are excellent implements for this purpose. Red raspberries are like blackberries in being deep rooted; but the roots of the black-caps run near the surface, and should not be disturbed by deep plowing.

The Gregg has long been the standard black-cap raspberry, but has been largely supplanted by the Nemaha, as the latter is somewhat hardier. The Older is also widely grown. The Souhegan and Palmer are too small to be of much account. The Kansas is undoubtedly the best black-cap, and has come to be most popular. It is perhaps the hardiest of all and, in quality, the best. It is a strong grower and the ripening season is short, two or three pickings taking most of the berries.

There are some apparently good reasons in favor of the deep planting of raspberries. It is perfectly fair to infer that deep-set plants ought to suffer less from drouth, and that there should be less chance of their being blown by the wind. Of four hundred Palmer raspberries, one-half were set in furrows from four to six inches deep and covered with from two to three inches of soil, leaving the remainder of the furrow to be filled in gradually.

Other rows were set shallow, the furrows being about as shallow as they could be made by the plow, probably not averaging more than two or three inches deep. It soon became evident that the shallow-set plants possessed an advantage. They appeared more vigorous and more of them lived. This advantage has been maintained, especially from the fact that the stand was so poor in the case of the deep-set plants. This is not proof that shallow planting is always best. It is simply one instance under one set of conditions where it has given better results.

These conditions are a climate unfavorable to the raspberry, and a soil mellow and rich at the surface, but closely underlaid with a hard and impervious subsoil. Deep planting naturally placed the roots in less congenial soil, the result being that, while apparently they should suffer less from drouth, they really suffered more.

Pruning such fruits as the raspberry is really a process of thinning, and the only means used for that purpose. It is not that the plant derives any benefit from pruning; but that, if left to itself, it is likely to set more fruit than it can carry through properly to maturity. In a

dry climate, with a deficient rainfall and excessive evaporation, pruning must be close in order that fruit may develop to the full size, and the grower must be content with a smaller yield, unless he has sufficient irrigation.

The common practice with black raspberries is to pinch the young shoots soon after they start in the spring, when they have attained a height of eighteen inches or two feet. It is very essential that this be done while the plant is still young and when it reaches the desired height, because if allowed to grow higher and the top simply removed, the plant will be top-heavy and unsatisfactory. If much of the cane is cut away to bring it to the desired height there is a waste of growth, and the remaining buds are weak and slow to push forth branches.

After the fruit has been harvested is the best time to give the raspberries necessary pruning. One of the first things to do is to cut out all of the old canes. It is this year's growth of cane that bears the fruit next year, and it is quite an item to secure a vigorous, thrifty growth. By cutting out the old canes more room is given, and the new canes can make a better growth. At the same time that the old canes are taken out, all of the small, weak or unthrifty ones should be pruned away. Three or four strong, vigorous canes will yield more and better fruit than two or three times that number of small and weak ones. All canes not wanted should be treated as weeds and managed accordingly. There is no advantage in allowing the canes that are left to grow too long. If the strength of the root can be thrown into one-half the length of cane, a better quality of fruit may be secured. The rich shoots may be treated in the same way.

Four feet is as high as either raspberries or blackberries should be allowed to grow, and many good growers keep them pinched back to three feet. Thorough cultivation will help materially in securing a better and more vigorous growth. It should be remembered, with all fruits, that very largely next year's crop of fruit is determined by this year's vigor of the plant, and it will pay to take considerable pains to secure a strong growth.

Blackberries.—Once get a plat set to blackberries of the hardy sort and they will last indefinitely. There is hardly any bush that is so hard to exterminate as the blackberry and its cousin, the dewberry.

Blackberries are not very subject to disease, but spraying makes the health of the bushes secure and should not be neglected. The sprouts that come from the roots are usually the main seat of the trouble, but should not be, as the sprouts that spring up produce plants which bear the future crops of berries. By allowing the sprouts to grow and cutting out the old bushes, a blackberry patch constantly renews itself and never requires resetting.

In reply to the question, "Do you know of any cultivator that can be made to run to one side of the horse so we can cultivate blackberries close to the bushes, without compelling the horse to walk so close?" R. M. Kellogg answers as follows: "I make breeches for my horses out of grain bags, by cutting them in two, one set for the fore and hind legs. I then put a 'siding' on the right side of the horse, and always keep this to the bushes; then nail a guard to the right handle of the cultivator, so it will raise the bushes up and pass them over the hand and arm, and we get along nicely. There being 'no land slide' to the cultivator to act as a rudder, it will follow the center of draft unless forced to one side by the 'Armstrong' method, which soon becomes somewhat wearisome. We spread our cultivators out, and go several times in the row if there be grassy spots."

Gooseberries.—The spring of the year is about the time for gooseberry bushes to begin budding, and it is then appropriate to consider the subject of mildew. This is a parasitic plant, or fungus, which appears on the surface of the young fruit and young shoots. It presents a frost-like appearance, being composed of glistening white threads. As it develops, the threads become more numerous and matted, lose their bright color and become a mass of brownish, felt-like substance.

Chief among the kinds most susceptible to mildew is the Industry. Nearly all English varieties, however, and their seedlings are victims of this fungus. The American sorts, while not absolutely exempt, or immune, are practically safe from injury from this source.

Mildew will appear from about the middle of May to the middle of June. It very seriously injures the foliage and checks the growth of the berries. The attacks vary in point of severity, and if the disease has not done considerable damage by the first of June there is not likely to be any further injury.

There are several fungicides used for the prevention of this dis-

ease, and one of the most successful is that recommended by the New York State Experiment Station, the recipe for which is as follows: One ounce of potassium sulphide to three gallons of water, or one ounce to two gallons of water. The potassium sulphide will cost from eighteen to twenty-five cents per pound, and the cost of seven sprayings for each bush will be about one-fifth of one cent. Five or six sprayings are generally sufficient, oftentimes three will suffice.

The solution may be applied with any good spraying apparatus. It is necessary to reach every part of the bush, and for this reason the sprayer should admit of thorough work with the least amount of inconvenience.

GRAPE CULTURE

The grape is so productive and bears so regularly that there is no sort of an excuse for the farmer who does not produce an abundance of this fruit. Its use is not confined to the time it is ripe and for the few days that the grapes can be kept stored. By selecting varieties that ripen at different times, and taking care to store them properly, the season of grapes may be extended from August 1 to the early winter. Mr. Augustine, of Normal, Illinois, told a farmers' institute how he enjoys grapes all the year round. He squeezes the juice from the ripe grapes and slowly brings it to the boiling point, and then cans it in common glass fruit jars.

In this way the juice may be kept all the year without fermenting, and as the juice of grapes is about all there is to them, he has the good part of them in a concentrated form at any time in the year. After the season for grapes is past, this supply of juice makes a delicious and refreshing drink, better and more wholesome than any wine that can be made by spoiling the pure juice by fermenting it. The juice of the grape contains much nutriment, and no trace of alcohol, and nothing is more bracing to a tired man or woman than a glassful of it just before a meal on a hot day.

Grapes now grow anywhere with little care. Trained to a garden fence, to the side of the house, or anywhere else where they can bask in the sun, a good crop may be expected every year. Even when a late frost kills the blossoms, the vine will make a new start and put forth new blossoms and bear a crop.

Planting of Vineyards.—Plant grapes for vineyards in rows eight

feet apart, and from six to eight feet apart in the row, according to the habit of growth of the variety. Dig holes about ten inches deep and large enough that the roots may be spread out naturally, without one root crossing another. In dry days it is better not to have many holes dug ahead of planting, as the earth will be moister if freshly dug. Put the finest and best earth at the bottom of the hole and among the roots, and the coarsest and poorest earth at top.

While planting, care must be taken that the roots do not become dry. To prevent this it is customary to carry them about the field in a bucket or tub partly filled with water, after the tops are cut back to two or three buds.

Cultivation and Pruning.—Always give good cultivation, and the first autumn cut back to four or six buds and cover the vine with earth. Uncover in the spring as soon as the frost is out, and after the buds start leave only the two best buds and rub off all the others as they appear. Let two canes grow the second year; they will probably get to some five or eight feet long; if so, cut one of them back to three buds, and the other to within four feet of the ground, to bear. This severe pruning in their early youth, together with good culture, will give them such a good send-off that they will ever after bear you bountiful crops of their luscious fruit.

How to Tell Fruit Buds from Wood Buds.—It should always be borne in mind that not all buds on the vine will produce fruiting branches next spring. There are fruit buds and wood buds. The former will produce shoots that may bear from one to several branches of fruit. The latter are not fruitful, but will produce simply wood growth. It is desirable, then, to be able to recognize the difference between fruit buds and wood buds.

In a general way this difference may be determined by the location of the bud. Let us call the branches which grew last summer, and which have shed their leaves, canes. A cane which grew from one-year-old wood (wood one year older than itself), usually contains fruit buds, especially near its base, and it will be fruitful. A cane which grows from old (more than one year old) wood will not be fruitful. It will be observed that the buds on the fruitful canes are large, round and plump. The buds on these canes are also near together. Buds on the barren canes are smaller and are usually farther apart. Some growers call them long-jointed canes. It should

be observed that a fruitful cane, which is produced from a branch that bore no fruit last summer, will be superior to one that grew from a branch which was bearing fruit.

Having learned the difference between fruit buds and wood buds, then prune the vines according to the directions already given.

Bagging the Ripening Grapes.—He who desires to produce the best grapes possible succeeds by bagging them at any time after they have formed. Usually they are put in bags when about half-grown, and allowed to remain in them until they are fully matured. The bags used are the ordinary manila paper bags of the grocer. These are slipped over the bunches of grapes and fastened with a fine wire, which is drawn just close enough to hold the bag secure, but not so closely that the stem will be pinched. The bottom corners are cut off to allow any moisture that may gather in the bag to escape and to allow air to get in.

Putting the clusters in bags prevents fungus diseases of all kinds, and protects the fruit from the attack of insects. The grapes keep clean and free from dust, and the natural bloom remains in its perfection.

It has been found that grapes ripen better when the leaves of the vine are allowed to shade them, than they do when the leaves are picked off, and they do even better when protected by bags. Every separate grape comes to full maturity, and the bunch is evenly and perfectly filled. The bags are not affected by rain, as it soon runs off, and they dry out as good as ever. It is but a small job to put bags over a few hundred bunches, and the bags can be bought very cheaply. The improvement in the fruit is very marked, and he who tries it will be well pleased with the result of his care. Those who contemplate showing grapes at the fairs should by all means bag enough for this purpose, as it is a perfectly legitimate way of improving the appearance and quality of their exhibit.

Propagating the Vines.—A very convenient way of propagating the grape vines is by layering. A vigorous branch should be selected, and after all its side growth is removed it is bent to the ground with the end over the spot where the new vine is desired. Here a hole six inches deep is dug; the vine is bent into it, and fastened in place with a forked stake or by laying a stone upon it, and then all but the terminal shoot is covered with soil. The shoot should then be tied to a stake.

After a year's growth the layer will be sufficiently rooted to admit of being cut loose from the parent vine. While this is a little more work, it is rather a better plan than making cuttings, when only a small number of plants are desired.

MELONS

A rich but sandy soil is best adapted to the growth of melons; if the soil is clayey, charcoal dust, sand or leaf mold may be mixed with it. New land is best for melons. Should they be slow in growing, apply a small quantity of nitrate of soda around each hill, and chop it in with the hoe.

One of the chief facts to remember, however, in the cultivation of melons is that they should be kept separate from all other fruits or vegetables, as they are of a very social disposition and like, above all things, to mix with other plants. First, therefore, select free, open ground for your melon patch. In cultivating, do not disturb the vines more than is absolutely necessary, as to do so retards growth and makes them produce smaller and later melons.

Stimulating Northern Melons.—In the northern limits of melon culture it is desirable to so stimulate the plants that they will produce fruit as early as possible, and this may be done by constantly feeding the plants during the whole season. Nitrate of soda, where it can be got, is a good stimulant, and while it is a pretty costly way to supply the plants with nitrogen, it pays with as valuable a crop as melons. Stable manure spread over the surface of the soil and worked in is good, and it is hardly possible to overdo this kind of fertilization, especially if the plants can be watered freely.

Fattening the Prize Melon.—Shrewd melon growers have a "secret" process of fattening their melons. When they see one of goodly proportions, they resort to a scheme of their own for increasing its corpulency. They procure a good-sized bottle, usually an old quinine bottle, and fill it with sugar-sweetened water, and, taking a darning-needle threaded with a cotton string, they pierce the stem of the melon, pull the end of the string to the aperture, put the other end through a cork, thence to the sweetened water (after having removed the needle) and then leave the melon to do the rest.

In a very short time the wound heals, and then the melon will "drink" more sweetened water in a day than the average man. It

begins to expand, too, and is soon the heavy-weight champion of the field. It remains in this comatose condition until fair time, when it wins the blue ribbon at easy bounds.

Raising Gem Melons.—The following article was prepared from statements submitted by some of the most successful melon growers of southern Illinois. Gem melons are profitable and will do well up to the northern boundary line of Illinois. In raising them, select a piece of land with good natural drainage, a south slope preferred. Plow and prepare in best manner possible, pulverizing thoroughly and leveling down with a drag. This work should be done as soon as all danger from frost is over, say April 20 to May 5. Mark off with a Diamond plow in rows five feet apart, cross-mark four feet apart. This can be done with a cheaply constructed marker, which will mark two or three rows at a time.

Drop about one quart of well-rotted manure in each cross-mark or hill. This manure should be thoroughly pulverized. This work can be done in early March. If well-rotted manure cannot be had, use fresh manure, but mix it in the hill so that the seed will not come in direct contact with the manure. Plant six or eight seeds to the hill and cover about one inch. In case the ground is very dry, cover a little deeper.

The melons will be up in a few days. The striped bugs, which are so destructive to melons, cucumbers, etc., must be looked after. An application or two of air-slacked lime or wood ashes, with a little California insect-powder added, will generally destroy them. A convenient way to apply this is to take a tin fruit can, nail a broom stick in it, pierce the bottom full of holes, and fill with either of the mixtures named above. With this device a man can cover two rows at an ordinary walk, and finish forty-five acres in six to eight hours.

As soon as the third leaf appears, work patch both ways, with either a small tooth cultivator or shovel plow; with a hoe scrape all weeds from the hill and draw some loose soil around the plant. Replant all missing hills and thin down to two or three plants in a hill. Continue both horse and hand cultivation until the vines cover the ground to such an extent as to make cultivation impossible.

The important points are pure seed, thorough cultivation and earliness. Secure your seed from reliable sources and plant largely pure Netted Gem, or Rocky Ford Gem. Try a few of Paul Rose.

Watermelon Culture.—F. J. Merriam, of Battle Hill, Georgia, the great southern gardener and truck grower, who has made the work so profitable, writes as follows concerning watermelon culture: "To be successful with watermelons, the grower must first select the proper location. The land should be well drained, of a light, sandy texture, and naturally fertile. Freshly-cleaned land is a good place, or an old straw field which has lain out a number of years. We have also had good success on a pea-vine stubble, following in rotation with cotton, corn with peas sown between, followed by oats, with peas sown again after the oats, to be cut for hay, and to furnish the pea-vine stubble for our melons; then cotton again, and so on. In a four-year rotation like this, melons are less likely to suffer from that disease known as the southern blight. But even this far apart they are sometimes affected. Indeed, this matter is assuming very serious proportions, and a remedy for the wilt, or blight, is needed.

"It seems that the Alabama Experiment Station is meeting with some success in checking the disease, by an application of lime to the affected land during the winter previous to planting. They are, I believe, continuing these experiments, the final result of which will be looked forward to with interest. It can, at any rate, do no harm to try lime at the rate of, say, forty bushels per acre; for when one has to find a fresh piece of land every year on which to plant his melons the land available for this purpose soon becomes exhausted.

"After we have selected our location, the land should be well broken with a two-horse plow and worked down fine. Then lay off the rows ten feet apart with double mold-board plow, going twice in the row, and running as deep as possible. A little dab of manure in the hill is not enough for melons; they need lots of fertilizer, and they need it spread out for a considerable distance from the center of the hill; for as long as the roots can reach out and find fresh fields to conquer, the vines will continue to grow. Everyone, however, is not able to obtain manure or compost for his melons; especially is this true with the large grower, and guano, if properly applied, can be made to answer very nicely. The main advantage with compost, when put deep in the ground, is that it holds more moisture for the crop during a drouth.

"A fertilizer for melons should contain about the following proportions of materials; ammonia, 5 per cent.; phosphoric acid, 6 per

cent., and potash, 7 per cent., used at the rate of not less than 500 pounds per acre. Instead of that, the following may be used: Take nitrate of soda, 200 pounds; cottonseed meal, 700 pounds; acid phosphate, 840 pounds, and muriate of potash, 260 pounds, to make a ton—or tankage (9 per cent.), 625 pounds; bone meal, 1,100 pounds; and muriate of potash, 275 pounds, will also make a fertilizer with the proper analysis."

TREES, LAWN, SHRUBS AND FLOWERS

The trees and shrubs may be called the frame, or setting, of the flower-bed, and the lawn is often its background. Their proper care is therefore the subject which is first taken up.

Evergreen Trees are especially valuable for screens, for windbreaks, or for a background against which to group trees with highly-colored leaves or branches, and for winter decoration. Too many should not be used together near the farm buildings, as they give a dark effect and often present an unhealthy appearance.

The best time to plant evergreen trees is in the spring, during April or May, just when the buds are ready to push; or, if fall planting is preferred, it should be done in October or November. Great care must be taken that the roots do not become dry by exposure to sun and wind. It is best to select, for their removal, a moist day.

Austrian Pine (*Pinus Austriaca*) is of a compact growth; it is cone-shaped with a broad base. The leaves are dark green and nearly six inches long. The branches are equal around the tree and well distributed. They need plenty of room for good development. This tree can be most safely removed when not more than three feet high.

Red Cedar (*Juniperus Virginiana*) is one of the hardiest and most easily grown evergreens; but the principal objection to this tree is that it is often badly attacked by the fungus (*Gymnosporangium Macropus*), which spoils much of its attractions.

Scotch Pine (*Pinus Sylvestris*) is of more open, spreading growth than the Austrian pine. The branches and foliage are not so heavy, and the leaves are of a lighter green. The Scotch pine grows quite rapidly, and if carefully handled can be reared with very good success.

Dwarf Pine (*Pinus Montana*).—This tree forms a low, broad, dense growth. The trunk is divided at the base into several ascending

smooth branches. The leaves are dark green. This tree grows quite readily when transplanted, and it is considered one of the best for hot and dry locations.

White Spruce (*Picea Alba*) is a very good evergreen. Its growth is slow, but neat and symmetrical. It sometimes attempts to grow two leaders, but this can be easily prevented by pruning. The foliage is light green. It thrives on a variety of soils.

Colorado Blue Spruce (*Picea Pungens*). This tree is fully as hardy, and even more beautiful than the white spruce. It is noted for its handsome blue-green foliage. The tree is of moderate growth, of rather a regular and compact form. It needs but little pruning, and retains its pleasing color during the entire year. It is comparatively easy to transplant.

Care of the Lawn.—Nothing is prettier than a lawn well set with a thick turf and kept nicely clipped. Most people in mowing a lawn make the mistake of cutting the grass too closely, setting the lawn mower as low as possible. The mower should be set high, and the grass clipped every week. The clippings should not be raked off, but left to wither and fall among the blades as a mulch for the roots and a fertilizer for the soil. When this is done, it makes a soft, yielding surface, like a thick carpet, which the ideal lawn turf should resemble.

Sometimes a lawn turns brown and refuses to grow well. In such cases sprinkle with a moderate dressing of wood ashes and after the next rain put on a thin dressing of very fine manure, raking it down among the grass. Better than this is a dressing of nitrate of soda, which will cause the grass to spring up almost at once, and in a few days it will be a thing of beauty.

Seed Box for Flowers.—An excellent box in which the seeds for early flowers can be sown is about eighteen inches long, fifteen inches wide and three and one-half inches deep. This box can be placed in the window beside the cutting box. A good soil for the seed box is made of three-fourths soddy loam and one-fourth sand; this mixture gives a soil that drains well and does not run together after it has been watered a few times.

In this box can be sown pansy, verbena, petunia, snapdragon, sweet alyssum, salvia splendens, or seeds of any other familiar plant that will stand transplanting and is desired for early blooming.

Enough plants can be grown in a box of this size to supply a good-sized flower garden.

When the calla lily begins to bloom, if the pots are placed in shallow pans of water and left there, the blooms will be found to last much longer and remain more plump and fresh than where water is simply applied to the surface of the soil.

How to Grow Cuttings.—The cuttings of many of the plants to be used in the flower garden should be rooted during the months of February or March. Geranium cuttings made during these months should be covered with blooms during the summer months if they are given proper care.

Other plants that add greatly to the beauty of the garden, which may be propagated by cuttings, are the Coleus, Iresine, Althermanthera, and Centaurea. These plants all root readily from cuttings. They can be started in a cutting box in the window, which should be as long and wide as desired, for the limited space, and about four or five inches deep. It should be filled with clean river sand. When the cuttings are first made they should be shaded during the heat of the day, and sprinkled several times a day until the cuttings become thoroughly established. The sand should always be kept moist, but never wet.

Cuttings are often rooted in a deep plate filled with moist sand. There are various contrivances used for rooting cuttings, but in each case the rooting medium is clean, moist sand. Soil is apt to become soggy.

Layering Flowering Shrubs.—Layering plants is one way of propagating such flowering shrubs as roses, lilacs and snowballs. To do this properly work the surface of the soil around the parent stock until it is fine. Then carefully bend down a branch until it lies on the surface, holding it in position by driving small stakes across it. Repeat the operation until all the branches that are to be laid down are in position, and then cover the portion laid down with six inches of soil, leaving two or three of the buds nearest the tip exposed. Let these lie in position until next spring, then cut free from the parent and take up, when a bunch of roots will be found to have formed on that part of the branch which was covered.

Wall Creepers.—One of the best wall creepers for a permanent cover is Ampelopsis Veitchii, but the flower of it is insignificant and

odorless. This fastens itself as it rises, and, as its "foot stalks" absorb the moisture from the surface to which they are attached, the wall will be drier thus covered than without.

The various sorts of honeysuckle are fragrant, but must have support. The objection to them is in the trimming out required. A crimson Rambler rose once started would soon cover the wall and be a thing of beauty for at least a month during the summer, but, like others of the climbing roses, would need support. So also the wistaria, the clematis and the Aristolochia Sypho.

The Madeira vine grows quickly, and when in bloom in autumn is very fragrant, but its leaves become spotted and break easily, and it dies down in winter.

For annuals nothing can exceed the *Cobea scandens* for rapid growth and large handsome flowers. One plant, bought for a dime in June, covered one corner and up the roof to the peak of a story and a half house, remaining green and covered with flowers until November. The moon vine, morning glories, and a host of others, are acceptable, but are annuals and must have a support.

GINSENG AND PEANUTS

In various sections of the United States ginseng, the famous Chinese and Korean medical root, is being cultivated with more or less success. The Ozark region of southern Missouri, as well as southern Illinois, are said to be especially adapted to its cultivation. New York and Cincinnati are the chief exporters of ginseng, and those cities take a large percentage of the American crop.

The root, which is of commercial importance, consists of two parts: the root stalk and root proper. The former, not more than one-third of an inch in diameter, shows scars that indicate one year's growth, the same as the fiber rings on a stump indicate the age of the tree. When young, the roots resemble little parsnips, becoming forked and darker in color as they grow older. Cultivated roots weigh from one-half to three-quarters of a pound.

"From five to eight years are required for the development of profitable ginseng," according to the editor of the *Farmer's Voice*. "Apple orchards require a similar period, and hence it is that some ginseng advocates are claiming that if orcharding is profitable, gin-

seng growing is doubly profitable. The seeds of the plant are sown in the spring after danger of frost is over, and by the following fall small roots will be formed, which will bear seed the following year. Roots for setting out are dug in September and October and planted at the same time where desired. On one point information is rather unsatisfactory; from what we can find out, the roots should be set in a rather shady place, protected from hot sunshine. Moisture is one of the essentials to successful ginseng growing. If nature does not supply it, the grower must secure artificial assistance. The roots grow very slowly, and are not marketable until five or six years old. The bed in which the seeds are planted should be long and narrow and inclosed by a high board-fence—high enough to afford protection from the sun. No grower of the plant advises one to engage in the business on a large scale unless he thoroughly understands it and has ample capital to bridge over probable losses. The wisest plan seems to be the sowing of seed in the spring. Seed may be purchased at a fair price from propagators in several sections of the country."

If you desire to cultivate peanuts, plant them about the first of May, or as soon as the ground gets warm, in rich, sandy loam. Get the raw nuts. Either Red Cross or Little Spanish is preferable. Take the kernels from the pod, but leave the thin brown covering unbroken on the kernel. Plant in rows three feet apart, and eighteen inches apart in the rows, two kernels in a hill. Keep free from weeds by level cultivation until the vines are about eight or ten inches high, when they will bloom profusely with a small yellow flower. Now draw loose dirt up on both sides of the row, close to the vines, but do not cover up the blossom. Soon you will see a rootlet leave the blossoms and run down into the mellow soil, on which will grow the nuts. Continue to draw the dirt up to the plants as long as they bloom. Then keep free from weeds. Let stand until about the first of October. Then run a potato fork under the hill, and by taking hold of the top the vine can easily be taken from the ground with the nuts hanging to the roots. Let them lie in the sun for one day; then put them in a shed or hang on poles in a dry place for about three weeks before taking the nuts from the vines, so that the substance in the green vines will ripen and mature the nuts. At the end of this time they will be cured, and may be taken from the vines and spread on the floor to cure sufficiently to sack.

INSECT PESTS

It is the neglected garden that is eaten up by insects. This seems a very natural proposition, but the point that we want to make is that insects are kept in subjection more easily when the garden is kept clean than they can be when weeds and grass are allowed to grow to furnish harbors and hiding places for them. As a rule, insects do not like to travel over a soil that is kept cultivated until it is as fine as dust. They prefer to work where they have a solid foundation, such as a soil the surface of which is beaten hard and smooth by rain. Where the garden is kept stirred and turned over by constant cultivation, they usually seek some quieter spot. For this reason the best way to keep the garden free from insect pests is frequent and thorough cultivation.

During recent years the insect enemies of garden crops have become much more numerous than formerly, largely on account of the ravages of imported varieties, which seem to thrive in their new environment, and this makes a knowledge of how to meet these new enemies absolutely necessary to the greatest success.

The best way to begin is to give the various garden crops the best possible chance by providing good soil, proper plant food and cultivation, that they may grow up vigorous and better able to resist destruction from insect pests. Without these the crop will not be worth the trouble of preventing attack from these destroyers. After these precautions come watchfulness and prompt attention to remedial measures.

Fatal to All Insects.—The following is recommended by a practical gardener as an insecticide: Take the leaves and stems of the tomato plant and boil them in water until the juice is all extracted. When the liquid is cold, it is to be sprinkled over the plants attacked with insects, when it at once destroys caterpillars, black and green flies, gnats, lice, and other enemies to vegetation, and in no way impairs the growth of the plants. A peculiar odor remains and prevents the insects from coming again for a long time.

Salt-peter for Bugs on Vegetables.—Salt-peter is destructive to insect life on vegetables. To destroy bugs on squashes and cucumber vines dissolve a tablespoonful of salt-peter in a pail of water, put a pint of it around each hill, hollowing out the earth around the stem of the

vine, so that it will not spread. Twice as much of the liquid applied to peach trees will kill grubs there.

Lice and Scale on Plants.—Crude petroleum and castor oil in equal parts, daubed on the leaves and stem of a rose bush covered with scale or rose-bugs, will destroy the pest and leave the bush in good condition.

Kerosene will destroy lice on plants. It should be spread onto the under side of the leaves, the stem and all parts of the plant, with an ordinary small atomizer.

Steep tobacco in water and when the liquid is lukewarm, sprinkle plants infested with green lice. A few applications will make them entirely free of the pest. The natural dried leaf of tobacco, one leaf to a quart of water, is recommended, but any tobacco will do. This will not injure the most delicate plant.

Hellebore Powder as an Insecticide.—"Having learned that white hellebore powder is death to insects," writes W. Whitworth, of Cleveland, Ohio, "when I laid out my little flower garden some ten years ago, I bought a pound and began operations on a few choice remon-tant roses I had set out. Believing that prevention is better than cure, I gave the first dose with the earliest leaves of spring. I mixed one heaping tablespoonful of the powder in a pail of water, with two spoonfuls of coal oil by way of good weight. This I sprinkled over the tops of the plants by means of an ordinary watering-pot—only that I had the nose made flat instead of rounding, as is the usual style, so as to concentrate the flow of water, in place of being spread out into a wide extent of straggling spray that has little or no practical value. This I repeated once each two weeks, and with such good results that no marauding insect has ever appeared on the bushes, albeit the roses all round about are literally 'skinned alive' with the insect pests that devour them.

"But this has not been all. During a great many years I had observed that by the middle of summer the limbs of currant bushes were stripped of their leaves, so that nothing was to be seen but unsightly bare limbs. So I gave my two currant bushes a like dose with the roses; and, to my delight, with like happy results. Not a leaf became discolored or dropped off till Jack Frost got in his legitimate work in the fall. And during the eight recurring seasons there has been no change from this."

The Toad as an Insecticide.—To most people a toad is nothing but an unsightly reptile which is to be shunned as much as possible. The superstitious think it venomous, but it is not.

The toad is not only harmless, but is of great use to the gardener, as every worm or insect that comes within reach is devoured greedily. Centipedes, caterpillars, blister beetles and bugs of every kind are equally welcomed by the toad. He uses them all alike. They wander within reach of his long, glutinous tongue, which flashes out so quickly that the eye cannot detect it, and the victim is gone. The toad swallows once or twice, winks his round eyes placidly, seems to smile and is ready for as many more of the same kind as come his way. Half a dozen toads in a garden will keep it free from most of the ordinary garden pests. They are easily tamed, and spend the day in some shaded nook along the fence, or under a cabbage leaf, coming sedately forth at night to find their food. Where the good qualities of the toad are understood he is always a welcome visitor, and his stay is made as pleasant as possible.

Potato Bugs.—Paris green kills potato bugs in a very short time. Most people use the mixture too strong. Two ounces to fifty gallons of water is effectual if the mixture is kept constantly stirred.

An expeditious way to get rid of a great many potato bugs is to watch for the first appearance of the old ones that lay the eggs from which the new crop is hatched. These appear early in the season and eat little, but they lay the eggs for the brood that destroys the crop. To kill these is to destroy a generation which will follow if they are not destroyed. The quickest way to dispose of these old bugs is to hand-pick them from the vines, and drop them into a vessel which contains water and kerosene oil. A small tin bucket, or even an old tin can, half full of water, in which a few spoonfuls of kerosene has been poured, will very effectively quiet them, and it is comparatively easy to get most of them.

Some farmers sprinkle the seed, before putting in the ground, with sulphur. "If one has already planted without knowing this," writes A. A. Watkins, of Warren County, North Carolina, "get a teaspoonful of Paris green, mix it in a pint of flour, and put the mixture in a quart tin cup; stir well, and tie a piece of cheese cloth over the top. In the evening, when the potatoes commence coming up, dust a small quantity over every sprout that has come up that day. Go over the

next evening, dusting every new sprout, until they all come up. If one happens to escape, as soon as the small ones make their appearance dust them a little and you will have no more trouble."

The Cabbage Worm.—To destroy the green cabbage worm: pulverized resin, five pounds; concentrated lye, one pound; fish oil, one pint; water, five gallons. Place oil, resin and a gallon of water in an iron pot and heat until the resin is softened; add lye solution as for making hard soap, and stir well; then add rest of water and boil for about two hours, or until the mixture will unite with cold water, making a clear liquid. For use, one gallon of this solution is diluted with sixteen gallons of water, and afterwards three gallons of white-wash is added. To this add one-fourth pound of Paris green and stir in. Put on with a good hand sprayer; it stays and does its work thoroughly. The use of this compound on a ten-acre field is estimated to cost about two dollars per acre.

Another recipe: Take common Persian insect powder, being sure to get that which is fresh, and put it into a common powder gun, or in the absence of that, a pepper box with a perforated top, and early in the morning sprinkle a little of the powder over the inside of the leaves on the worms that are at work. In five minutes every worm that is touched will be dead, and a few such treatments are all that is necessary in a season. The insect powder is not poisonous to anything but insects, and may be used with safety.

Striped Cucumber Bugs are about the hardest to deal with. They come in a night and destroy the vines in a day. Usually they send a scattering advance guard, which should be the warning, for thousands are certain to follow. Mix five pounds of air-slacked lime and a quarter of an ounce of Paris green very thoroughly and dust the leaves with this while the dew is on in the morning. Do this before the bugs come, and repeat occasionally until danger is past, which will be the last of June usually, although they sometimes come later. Do not leave any clods around the hills. Make the surface smooth, so there will be no hiding place for the bugs, and sprinkle the mixture on the ground pretty freely. Soot from a chimney where wood is used is good, and some drive them away with road dust sprinkled freely on the leaves, as they seem not to like grit. Be sure to get the remedy, whatever is used, on the under side of the leaves, as there is where they feed.

Squash Borers are becoming worse every year, seemingly, and in some sections they have made it almost impossible to grow squashes. They work in the vines, beginning at the roots. The eggs are laid, early in the spring, on the stems just where they come from the ground, and the borer hatches and works inside. The lime and Paris green will be a good thing to use early in the season, and as the vines begin to grow hoe the soil over the crown where the vines come from the ground. As the vines make growth, cover every second joint with soil to the depth of two inches, and roots will strike into the soil almost at once, adding vigor to the vine, even keeping it growing when the borers succeed in getting into it. If the vine begins to droop, split it open with a sharp, thin knife and find the borer, and kill it. Then cover with soil, and it will usually revive and grow without injury.

Leaf Hopper, Thrip and Erythroneura Vitis are all different names for the one small insect which is often numerous on the grape vines during summer. They are about one-eighth of an inch long, of a light color and marked by three dark red bands. They fly from their position, on the under side of the leaves, when the vines are shaken, and soon light again.

To combat them in the summer, when their destructive work is noticeable, is difficult. The early spring is the best time. They may be found under the leaves near the vines. If the vineyard is cleaned of all litter, and this promptly burned, many will be destroyed. The insects remaining on the ground can be killed by a spray of coal oil solution.

Cutworms are hard to catch, as they keep hidden during the day. Usually they do but little damage if the garden is plowed very early in the spring, and allowed to freeze and thaw a few times. A good way to kill them is to sprinkle Paris green on slices of potatoes and lay these pieces near freshly set out plants.

How to Destroy the Mole.—"Some people claim to believe that moles are a greater benefit than an injury, for the reason that they are almost wholly insectivorous in their diet. This I dispute," says Bryan Tyson, of Hullison, North Carolina. "A mole will destroy seed corn after it has been anointed with tar from the southern pitch pines, while every other known animal and fowl, including crows, will pass it by. I think the great majority of farmers will favor their

extermination. I therefore submit the following cheap and effective plan. Mix a quantity (no particular rule) of arsenic with corn dough, make a small hole into their roads here and there, and deposit a lump of dough in each about the size of a marble. Cover the holes with any convenient substance, such as clods of dirt, to exclude the light.

"Some years ago I had a piece of land badly infested with moles, that I wished to plant to sweet potatoes. Success depended on first getting rid of the moles. As a matter of experiment I concluded to try corn dough and arsenic, as above, and two applications resulted in a virtual extermination. Some of the moles came out of the ground and soon after died. Other poisons may answer as well, but I know that arsenic can be relied on. The best time to apply is perhaps in early spring, soon after the moles leave their winter quarters."

CHAPTER XV

THE ORCHARD

Plowing and Fertilizing—Transplanting—Forcing the Blossoms and Fruit—Girdling and Pruning—The Apple Orchard and Its Care—Grafting the Old Trees—Picking, Packing, and Storing the Fruit—The Peach Orchard and How to Cultivate It—Plums, Pears and Cherries—Save the Birds—Enemies of the Orchard and How to Exterminate Them—Black Ants, Borers, Peach-leaf Curl, Black-knot Fungus, Curculio, Codlin Moth, Tent Caterpillar, Rabbits and Ground Mice.

The man who is going to plant a field to corn always takes considerable pains to properly prepare the land for the crop, although it is one that will be matured within four months. The man who is contemplating setting out an orchard very often makes no preparation at all, being content to set the trees in soil that has not been touched until the time comes to dig the holes and dump the trees in. An orchard must be cultivated. It is in fact a garden—a fruit garden—and must be treated as such.

In the beginning it is very important to select suitable varieties, such as are adapted to the climate and the soil. As to a list of varieties this is best made up by a careful study of the best orchard in one's own neighborhood. It is a hard struggle with nature, with certain defeat at last when one errs in this particular. Before buying his trees the amateur planter always will act wisely in consulting honest men of experience.

Plowing the Orchard.—The manner in which too many farmers plow their orchards, when they plow them at all, accounts in large measure for partial fruit failures and unsatisfactory growth of trees. It were better not to plow up the orchard, particularly if the trees have not reached full bearing age, than recklessly go through it in the spring with a deep-set plow and tear out roots by the wholesale. There wouldn't be so much damage done if the plow were not run so close to the trees.

The effect of such unwise treatment of fruit trees is to check wood growth and encourage an abnormal production of fruit. Then the reaction comes, and the trees seem unwilling either to produce fruit or develop wood.

Generally speaking an orchard should be plowed not more than once in five years. And it should not be deep, nor should the earth be plowed up near the trees; they should occupy an unplowed strip twenty feet wide or more, depending upon their age and consequent root development.

The orchard never should be permitted to become foul or infested with weeds. Disking early in the spring should be followed by periodical harrowings through the summer months and until time for sowing a cover crop, such as rye or vetch.

Fertilizing with Manure.—Fertility is the basis of all successful production from the soil. This is true of fruits as well as of other crops. In a majority of cases a rich soil can be secured in the orchard only by manuring, and early spring is a good time to haul out and apply the manure. It can be scattered broadcast all over the surface, and will soak in as soon as the condition of the soil will permit. There is little if any danger of getting that soil in the orchard too rich.

Ashes Help Growth of Young Trees.—It has been found a very beneficial practice to sprinkle a bushel or two of wood ashes about the roots of young trees. This may be done about the last of May, a little earth being removed from around the base of the trees and the space filled in with ashes. Because of the alkali which they contain they drive away numerous insects and fungi. Moreover, they furnish a valuable fertilizing material, decomposing and forming potassium carbonate, which is in time, after further decomposition, appropriated by the trees. All kinds of ashes may be used to advantage among fruit trees, which demand a large supply of potash.

Commercial Fertilizers.—If the orchard is on rich and naturally fertile soil the chances are that its greatest need will be potash. The phosphoric acid in the soil will not be exhausted as quickly as will the potash, and the necessary amount of nitrogen may be maintained by growing clover on the land. In some experiments at the New Jersey station it was found that commercial fertilizers were much cheaper for peach trees than barn-yard manure. Professor Voorhees

recommends for apple trees a mixture of one hundred pounds each of ground bone, acid phosphate and muriate of potash to be applied early in the spring at the rate of four hundred pounds of the mixture to the acre. This mixture contains very little nitrogen, but is rich in potash and phosphoric acid. The nitrogen would be furnished by plowing under a crop of clover quite early in the spring, having first sown the fertilizer in order to have it plowed under where the roots of the trees could get at it.

Peach trees, being shorter lived than apple trees, should be treated with a fertilizer somewhat different in its composition. For this purpose nitrogen should be added, as it is from nitrogen that leaf growth comes to a large extent.

In any case no growing crop should be allowed to stand in the orchard during all the season, as the roots of the crop use the plant food that should be left for the use of the trees, and the moisture in the soil is all needed by the growing trees. Where clover is grown it should be plowed under before the middle of May.

Transplanting into Trenches.—Trenches should be constructed at proper distances apart according to the kind of tree to be grown; they may be two and a half feet deep, three feet broad on the bottom and four feet at top; they may be constructed with a plow and shovel.

The trenches, except spaces of about five feet at proper distances apart, should be filled to within six inches of the top with green round timber, bark on. Red oak, white oak or hickory will be good; any wood considered better than pine. The trenches should then be filled with soil, which will cover the logs to the depth of about six inches. The spaces will indicate the distances apart the trees will stand in the trenches. They are to be properly filled with soil, to which well rotted chip manure, or other suitable material, may be added. Thus arranged, the trees can become sufficiently well rooted to withstand storms, which would not be the case if they are planted immediately over the logs. In setting, the trees should not be planted any deeper than they originally grew.

While the timber in the trenches is rotting the oxygen of the air, or of rainwater, combines with the carbonic acid gas. This gas is a powerful solvent and acts on certain rebellious elements of the soil, reducing them to plant food.

Now any plan that will hasten the decomposition of the wood will prove beneficial. With this in view, iron tubes of suitable size and length may be employed. They may be about three inches in diameter and of proper length to stand about six inches above the ground when planted. The arrangement at the bottom should be such as to prevent the dirt from running among the logs.

Puddled clay thrown around the bottom of the tube will be good. A tube for each compartment will be required. If preferable, the tubes may be constructed of some durable species of wood.

Banking up Young Trees.—With those who have tried banking up the trees which they have set in the fall, no word or argument is necessary to convince them that it is time well spent. The reasons given by *Vick's Magazine* for favoring this process are as follows:

"If the earth is piled against the stem of the tree a foot or more high, it will greatly lessen the evaporating surface exposed and prevent the loss of sap to a corresponding extent. It will also keep the soil next the roots moister than it would be if left at its natural level. And if the tree is pruned back somewhat, as it usually should be, there will be still less chance of evaporation. This bank of earth will also help to keep the tree from being shaken about by the winds, and we well know that a newly-planted tree should be as little disturbed as possible until its new roots are grown. The firmer the bank is packed the better, for it will set closer to the tree and roots than if very loose. In the spring the mounds may be leveled down after growth has well started. Cultivation will necessarily work them down to about the natural level by midsummer."

Forcing Blossoms.—A curious feature in fruit and seed growing is the fact that with proper care blossoms may largely be forced to the fruiting type (female flowers), and the number of male blossoms systematically kept down. Professor Meehan's experiments seem to have proved beyond doubt that abundant moisture and nourishment tend to produce female blossoms.

Very frequently no effort is made to use plant food in orchards, yet a crop of fruit makes a very severe drain on the soil. We all understand, without having to go back to first causes, why a horse cannot work unless fed, and why a cow gives little milk if dependent for sustenance on a worn-out pasture, far overstocked. In the same manner, plants must have nourishment to accomplish any useful pur-

pose, and this nourishment is very largely a matter of plant food—nitrogen, potash, and phosphoric acid.

It is not easy to state in exact words what a well-balanced plant food may be for each crop. There are many disturbing features; but, as a general rule, it is quite safe to follow the guide laid down by the plant itself. For example, if the chemical analysis of a certain crop shows it contains so many pounds of nitrogen, of potash and phosphoric acid, it is pretty plain that to grow a similar crop, at least the same quantities of each of the three elements of plant food are needed. The farmer who has had trouble with non-bearing trees, or light grain crops, will do well to look up this matter, and figure out what he has been giving his crops heretofore.

Budding usually begins in July, first with the pears, followed by plums, then apples, later on pears, then quinces and peaches. Old sticks must usually be budded earlier, as the bark with the older trees begins to adhere soonest.

This is considered the best way to bud trees: With a thin-bladed, very sharp knife cut through the bark of the stock on which the bud is to be set, making the cut horizontal and not too long. From this cut split the bark on the lower side about an inch. When the cut is properly made it will be like the letter T. Now carefully loosen the bark from the corners and run the point of the knife under the bark above the top cut, but do not break the bark. After this is done, press the bark back in place to prevent drying while getting the bud ready. To get the bud, take the knife and, beginning above the bud, cut deep enough to include a very thin piece of hard wood just under the bud. Now open the cut in the stock and slip the upper end of the bark that is attached to the bud under the bark of the stock above the first cut made. Draw back the bark from the lower cut and slip the lower part of the bark on the bud into place, then smooth the loose bark over it.

This, when properly done, leaves the cut side of the bud lying against the wood of the stock, with the flaps of bark outside the bark of the bud, the bud itself sticking out through the slit in the bark of the stock. All that now remains to be done is to wrap the stock with a waxed string, winding the string around, above, and below the bud so as to hold it tight in place, and at the same time keep the air from getting into the cut and drying up the juices.

Girdling to Produce Fertility.—Professor Van Deman writes as follows on how to make an unproductive tree bear: "The plan which I have followed with success and without permanent injury, is girdling in early summer time. This should be done in June. A single cut may be made with a knife through the bark, entirely around the trunk at any convenient place; or, two or more such cuts may be made. If a ring of bark several inches wide is peeled off entirely around the trunk of an apple or pear tree at this time of year, no harm will follow, for a new bark will soon form over the wound. Another very good plan is to remove long strips of bark about two inches wide, pointed at both ends, and leaving spaces of bark about the same width. Any of these will cause a checking of the flow of sap, and an unusual formation of fruit buds instead of an excess of wood buds. The trees of the stone fruits are much more sensitive to injury, and will not safely endure such treatment as has been described; nor do they usually need anything to force them into bearing."

Thinning.—Small and inferior specimens of plums, peaches, pears and apples are just as logically the results of overbearing as larger handsomer and more perfect specimens are results of thinning. Trees have a certain amount of energy to be used in the production of fruit. At first they devote their efforts to maturing as many pits as possible, a provision of nature looking to the reproduction of the species. This lavish contribution to the development of pits leaves but little vitality or strength for the development of the fleshy part of the fruit. Moreover, the trees are so exhausted that little, if any, wood growth is made, thus rendering them an easy prey to the severe freezes of winter, and seriously menacing their future usefulness. Only a few buds will be formed for the next year's crop if trees are permitted to overbear; hence, pretty severe thinning always pays.

Pruning should be done carefully and with judgment; hence, an experienced person only should do this work. As to whether fall or spring is the best time for it, there is a disagreement among fruit growers. One thing is certain, however, when it is necessary to remove a limb of considerable size—an inch or over in diameter—the best time is September and October. Wounds made at that season, though they may not heal over as quickly as at some other

times, will never decay. Owing, no doubt, to the ripe condition of the wood, the cut surface dries and becomes as hard as bone.

The principal object of all pruning is to trim away the branches so that the air and light may be let in to all parts of the tree and make the branches bear alike; for this reason the late winter or early spring is considered by many the proper time for pruning, as during these seasons of the year there are no leaves in the way, and it is easy to see just what trimming is required.

The lower part of the tree is apt to be too thick—too many limbs just above the lower branches—and the center of the tree is often too crowded for the best results. In taking off branches that are not wanted, cut them close to the base, and never an inch or two above where they start; for if not cut close, three or four shoots will start out, thereby increasing rather than decreasing the number.

Small twigs are apt to be too numerous, and these should be cut out. An important part of this work is in properly painting the wood. When pruned after the sap starts, it is not so easy a matter to get the paint to adhere to the cuts. Many a fine tree has been ruined by not being painted. Water gets in the wood, decay sets in, and soon the tree fails.

A good outfit for pruning may consist of a hand saw, pruning shears, small axe and a chisel fixed on a handle about six feet long, and a light ladder.

THE APPLE ORCHARD

Probably two out of every three people in the world, if asked what fruit they considered the most healthful and palatable, would pronounce in favor of the apple. The reason of its almost universal popularity is that in its composition it strikes "the happy medium," being in its percentages of water, acids, sugar, non-nitrogenous substances and mineral matters, almost midway between the other fruits, or the berries. The territory in which it can be successfully cultivated is also broader than that in which any other of the fruits flourish. A large space is therefore given to its cultivation.

Planting the Orchard.—In preparing to plant an apple orchard, the ground is plowed and the holes dug in the fall. Alternate freezing and thawing, during the winter, put the sides and bottom of the hole

and the excavated dirt in excellent condition for the reception of the tree roots in the spring.

In digging the holes, a spade length of the surface soil is first removed and piled on one side, the loose dirt being thrown out with a shovel. The hole is then dug another spade length deeper, and this earth, usually clay, piled on the other side of the hole, the remaining loose dirt not being shoveled out. This makes the hole about eighteen inches deep, the diameter about thirty inches at the top and twenty inches at the bottom. In every case the holes should be large enough to accommodate the roots, and should be in straight rows about thirty-three feet apart. Where the ground is in good condition it need not be much larger, but when the subsoil is hard and solid the larger the hole the better.

When received from the nursery, the trees are "heeled in," in trenches about eighteen inches deep, two feet wide and as long as required. The bunches are opened and the ground thrown between and over the roots, the tops leaning to the south.

The earliest planted trees always make the best growth. Planting is done soon after a rain, while the ground is moist, though not wet enough to be sticky. When the ground is in this condition, no water need be used in planting, and there is no trouble with dry clods.

A thin mortar of surface soil and water is mixed in a hole about twenty inches across and ten inches deep. A half-dozen or so of trees are taken from the trench, and one by one the roots dipped into the mortar, after which the trees are distributed along the holes. A line of stakes is set in each row, and while one man holds the tree in position another sights from the last tree set, thus keeping the trees in a straight line. A tree six inches out of line will make a great deal of trouble in cultivating.

Always set apple trees leaning heavily to the direction of prevailing winds in your locality, so that the top of a five-foot tree will be about two feet out of plumb. If trees are not braced by leaning in this way, they will soon be forced to lean the direction the wind blows. This is a very undesirable position, for the bodies are left unshaded, fewer limbs grow on that side and thus the tree becomes more and more unbalanced.

Grafting the Old Trees.—Many farms have on them a number of thrifty old apple trees which bear fruit that is of no use except to

make cider, and often not the best for that purpose. Such trees may be made valuable by grafting them in the top with cions from good varieties.

The new wood should be grafted on those limbs that would make the tree symmetrical after the grafts had made some growth. If cut off where they are an inch and a half through, two cions can be set in, and eventually there will be a fork at that place. No more of the top should be cut out than is necessary to make room for the new cions, and as these grow the limbs bearing the original fruit may be cut away to make room for them.

To set in grafts, cut the end of the limb square off and split with a thin chisel, being careful not to make the split too long. Cut the graft to a wedge shape and set in the split, being very careful to have the bark of the cion and the stock meet on one side. After the cion is set, cover the end of the stock and the sides, as far as split, with grafting wax.

How to Make the Grafting Wax.—Resin, beeswax and mutton tallow are the ingredients of the best grafting wax, and equally serviceable for a cut on a tree, which needs a salve. One recipe, highly recommended, requires two parts tallow, three parts beeswax and eight parts resin, while another recommends tallow and beeswax in equal parts, and resin twice as much as the two combined. The materials should be melted and mixed well until uniform throughout.

Picking and Assorting.—The practice of leaving apples on the tree until they are easily picked off is not a commendable one, as when left so long a heavy wind coming up will shake a great many of them down, and reduce their value to that of cider stock. The best time to pick apples is just when they have arrived at perfection, and no standard rule as to time can be given, for the different varieties mature at different times.

If apples are left on the tree until entirely ripe, they will not keep as well as they would had they been picked a little before fully ripe, and allowed to mature in a pile. When ripened off the tree they lose a little in juiciness, but this loss is so slight that it is more than made up by the advantage of the better keeping quality that comes with early picking.

As a general rule, apples should be picked before the leaves are off the trees. This means before a killing frost has touched them.

If picked early and piled up in the orchard and covered with straw, they go through a sweat similar to that of stacked grain, and cure out so they will keep firm and solid for a long time. Even late fall apples that are picked just before they are ripe, and ripened in a pile, will keep until Christmas in perfect condition.

The grower who is careless in picking and sorting his fruit, who pays but little attention to the kind or appearance of the package in which it is sent to market, is the worst sufferer; for it is this class of fruit that is passed by when there is an oversupply.

Packing.—Full regulation-sized barrels should be used for this purpose. Take the barrel, one head out, nail the hoops and break off the ends of the nails at the inside; place a layer or tier of apples, good and uniform size, smooth, bright, healthy, as closely as possible, stems downward, on the lower end; then fill up a basketful at a time, throwing out small, wormy, gnarly and windfall apples, and shaking the barrel well after each deposit until it is full two inches above the rim; place the head squarely on the apples, and with a screw or lever press force it into place and nail securely. Turn over the barrel and mark name of apple with red or black lead, or pencil. Bear in mind that, to be shipped safely, fruit must be packed tight, to prevent rattling or bruising.

In shipping apples the first of the season—early varieties—shippers should see that openings are cut on one side of the barrels and also in both ends, to admit of free circulation of air, which will greatly help to bring apples through in good condition during warm weather.

Storing Apples for Winter.—If to be put in the cellar, either in barrels or bulk, apples should be placed in piles of from twenty to forty bushels, and covered with sufficient straw to exclude light. All bruised or partially rotted or inferior specimens should be discarded or placed in a pile or bin by themselves; the sound ones should be very carefully handled, so as not to bruise them in the least, as the bruised place is where decay begins. Where they are in bulk, the temperature in the cellar should never be much under forty degrees, which should be maintained as uniformly as possible. If in barrels, the temperature may run as low as thirty-three degrees Fahrenheit.

A well-ventilated house or barn is a good place to keep apples until severe cold weather comes, when they should be placed in

winter quarters. "We have found the hay loft a nice place to keep them through the winter," says one successful grower, "but they were covered with several feet or more of straw and were on six feet or more of straw; the barn was tight and warm, and unless the winters were very severe, we never had many freeze.

"The length of time sound winter apples will keep depends to a great extent upon the manner in which they are stored. Jonathan, Winesap, Huntsman's Favorite and other varieties of this class have been preserved nicely until spring, the first of March, by very extra care and attention during the winter. A plan which has accomplished this is to wrap each apple in a piece of paper sufficiently large to cover it with one thickness; the extra paper is twisted and pressed around the apple, making the receptacle almost air-tight. Before placing the paper around the apples, however, they are thoroughly examined and carefully wiped with a cotton cloth; after wrapping them they are placed upon shelves in the cellar, a space for the free circulation of the air being left between them; that is, no apple is in contact with another, and there is but one layer on a shelf."

Cold Storage of Apples.—The standard barrel holding three bushels is the best for cold storage. For cold storage only barrels made from No. 1 stock should be used. This means thick staves of elm, cottonwood or sycamore, well seasoned. Buy the barrels early and store them away out of the dirt. Prices of barrels are invariably lower at the beginning of the season.

Never place a dropped apple in the barrel for cold storage. The probabilities are that it is bruised, even if you can't see it. The size of fruit to be picked should not be less than two and one-half inches in diameter. Each individual apple should be handled carefully, and baskets emptied with equal care. If the picking and packing can be carried on at the same time, it is highly desirable. Otherwise, take the apples to the packing-house as soon as possible.

PEACH TREES

Probably no fruit tree has been more abused than the peach. Orchard after orchard has been set out, to live a few years and then to be grubbed out as past its usefulness.

The peach orchard, to thrive, should be on the highest ground with a northern slope, if possible. The soil should be light and

loamy. Trees should be planted about twenty-two feet apart. The instructions previously given for planting apple trees should be followed in every detail. Special care should be taken with the fertilization, pruning and trimming. Peach trees are more sensitive and liable to the ravages of more insects than any other tree in the orchard, and, for this reason, unusual care should be taken in their cultivation.

"A warm, light, loamy soil is best for peaches, yet about any except a stiff clay will answer, if other things are right," says the famous grower, J. H. Hale, who has made such a success in the growing of peaches, both in Connecticut and Georgia. "Rocky hill lands that have been just a little too tough a proposition for good tillage in the past, make an ideal foundation for a peach orchard; there is color and flavor for peaches in these rocky old hills, and it is cheaper to remove rocks at odd seasons of the year than to buy fertilizers.

"When ready to plant trees, get big ones. I have planted nearly 400,000 peach trees in orchards the past twenty years, nearly all June-budded or else light to medium-sized one-year trees, with occasional lots of No. 1 or extra-sized trees. I really care nothing about the top, so long as you can get a heavy root and strong cane fifteen or eighteen inches up; you will cut away the rest anyway, and so be in shape to build any sort of top you may. I have made the most money, North and South, planting thirteen feet apart or closer each way. Of course, it means a lot of pruning, while wide-apart planting tempts neglect of this most necessary operation with the peach tree. Still, taking human nature as it is, I cannot advise the other fellow to plant very close. From eighteen to twenty-two feet apart each way will doubtless give the best results, planting closer in the South than in the North, where trees are inclined to more wood and foliage growth. Cultivate thoroughly.

"The first two years, after a month or six weeks of thorough culture, seed to cow-peas over two-thirds the space between the rows of trees, leaving space enough for good single-horse culture up and down each side of the trees for two months more. Leaving the pea-vines on the ground as a winter mulch will be less loss than to plow them under and so have bare ground all winter. After two years of peas in an orchard, the tree roots should reach out through the whole orchard, and should have the whole run of it to feed and drink upon

during the rapid growing months, when the liveliest culture is being given. If culture has been what it ought from the opening of spring down to the last of July or early August, trees will be growing so fast that they can't well stop before fall, and the whole ground should be seeded to clover at the last cultivation. I consider fifteen to twenty pounds per acre of seed is little enough for a thick clover carpet over the ground through the fall and winter, and is a great protection to peach roots. Plow this clover under early the next spring."

PLUMS

The prairie region of the West seems to be the natural home of the plum. This fruit is found in a wild state in the greatest abundance along the river bluffs and every place where there is natural timber. And yet the cultivated plums always meet with ready sale in the towns and villages. Many of the cultivated varieties are natives, improved, of course, by careful selection and propagation. They are the equal of the best California varieties, and, owing to their great freshness when placed on the market, are generally preferred by customers.

American plums, such as Wild Goose, from the seed, are slow to fruit. They will consume five to ten years in making and ripening wood before bearing. Root-pruning will force them to put on fruit. Cutting off the tap-root eighteen to twenty inches below the surface of the ground will check wood formation and throw the trees to fruiting. Pinching out new ends and cutting back the summer growth in July will develop the plum tree's fruiting propensity. The wood growing must be checked.

Plums are the easiest to grow of all the fruits in the western section of the country, and they do best when grown in the midst of the runs given to the poultry. The insects which make against the fruit are choice delicacies for the fowls, and but few of the most destructive of these insects will escape their sharp eyes when they have constant access to the ground. The people who give free run to their poultry, and those as well who keep them confined, if they have ground room suitable for the growth of plum trees, are throwing away dollars in not planting plum trees. Under right management the fruit can be made to pay for the keep of the hens, leaving all the returns from them net profit. Plums cannot be successfully grown in all localities,

but there is no question about their success within the territory above named, and everyone can have the profit of them who will reach forth his hand to take it.

PEARS AND CHERRIES

The best soil for the pear is one moderately heavy, sandy and dry, with a subsoil of light clay which is easily penetrated by the roots to a great depth. A moderate proportion of iron is desirable, and where there is a deficiency of this element use iron cinders. The best situation is an undulating eastern or southern exposure. As in the case of the apple, the best fertilizers are barnyard manure, wood ashes, lime and bone-dust.

There are a great variety of pears, those required for dessert being soft and sugary. Pears for stewing or baking should be large, firm-fleshed and moderately juicy. Many of the most delicious varieties, if allowed to ripen on the tree, become dry and insipid. It is therefore best, as a rule, to ripen them indoors on the shelves of a cool fruit room. In the cultivation of the pear the soil must be kept clean and well tilled, but the ground should not be deeply spaded or plowed near the trunk. If affected by blight, it is best, according to the Maryland Agricultural College, that the pear orchards should be got into sod as soon as possible.

The original cherry was an Asiatic growth, and in the United States is essentially a northern fruit. The soil does not require to be rich; in fact, the fruit flourishes with little or no manuring of the soil. The tree, however, needs to be trained so that the trunks shall be shaded and the fruit be protected from the sun. Repeated experiments in the transplanting of young cherry trees prove that nothing is gained by severe root-trimming.

SAVE THE BIRDS

Too many farmers make the mistake of allowing the birds to be killed off the farm. Mischievous boys are allowed to shoot everything and anything they please, and in many cases there are farms where there are but few if any birds. This applies not only to quail, but to many song birds as well. "While it is true that birds eat some fruit and some grain, and sometimes eat a little in the garden, from several years of experience I am satisfied that their war on the insect



Courtesy of the Breeder's Gazette

THE KING OF FRUITS IN STATE.

Few will deny this title to the apple. The pure, clear atmosphere of Colorado seems peculiarly adapted to the production of a large, spicy, appetizing specimen of the genus. The above is a scene at the Good Luck Fruit Farm, the location being Greeley, Colorado. As will be seen by reading the head of one of the bills on the table, the orchard, or farm, comprises 170,000 trees—a tidy little number!



Courtesy of the Breeder's Gazette

UNIQUE EFFECT IN SHRUBBERY TRIMMING.

The English farmer and householder is more given to the fashion of trimming his trees and shrubbery into set figures and symmetrical forms than is the American agriculturist. The above is an illustration of what may be done in the way of evergreen trimming to produce quite a unique effect. Neither is the result displeasing, when such forms are based upon a broad, well-kept lawn.

pests more than pays for all of the stuff they eat, and gives fully one hundred per cent. profit," says a Northern Illinois farmer.

"During the years we have lived on our farm here, we have never allowed birds to be killed at any time, especially quail. We have some fruit trees near the house, and, commencing early in the spring and all through summer, these are thronged with birds. There are two or more mocking birds, and these have been here for twelve years. We are certain we are bothered less with pests than our neighbors; and we have come to believe that the birds are the cause."

Insect pests and worms destroy large amounts of grain and fruit every year, far more than the birds, and it would, in a majority of cases, be better economy to save the birds and get rid of the pests.

ENEMIES OF THE ORCHARD

It is quite natural that the orchard should have more enemies—insect, bird, and animal—than either the farm or garden, since her luscious treasures are above ground, as well as the trees which bear them. The following article is therefore of foremost value to the grower of fruits, whether he be an experimenter or a successful horticulturist.

Black Ants and How to Destroy Them.—When your fruit trees lose their bark near the ground, look out for black ants. These pests will eat off a girdle of bark next to the soil. Frequent inspection should be made. If the ants are found, trace them to their nest, which will be not far from the trees they are attacking. Having found their nest, you can kill them with bisulphide of carbon. Pour some of the poison into the entrance to the nest, and cover the nest with a thick cloth, so weighted down with stones that the gas formed cannot escape. The gas formed by the evaporation of the bisulphide of carbon is much heavier than air, and therefore it will sink into the nest, displace the lighter air and suffocate the ants.

Even the ordinary conical ant-hill can be cleaned out by this method. Another way to destroy an ant-nest is to pour kerosene or gasoline into the heap, let it spread throughout the mass and then fire it.

Sugar will attract the ants. Scatter it freely about the nests. When the second ration of sugar is scattered, mix a little arsenic with it. The ants cannot distinguish between the arsenic and the sugar,

and the diet will do them up. The best way to fight ants is the way that will kill the workers and destroy the eggs at the same time. The firing method will accomplish this.

A Farmer's Way to Exterminate Borers.—"As a preventive of borers, keeping the soil of an orchard well cultivated will not do to depend on," writes J. L. Traughber, of Texas. "In Missouri I used to keep the soil about and between my trees as clear of weeds and grass as a public road, and as loose and fine as an onion bed ought to be, yet I have taken out as many as fifteen young borers, some of them more than two inches above dirt, on trees not larger than a hoe handle—enough to have eaten the tree off in a short time if they had not been removed while small.

"Borers do apple trees no great damage if they are removed before they are more than a quarter of an inch long, as up to that time they work only in the bark. If one knows how to look for them it is an easy matter to find young borers, or even eggs, on young trees with smooth bark. On older trees I would recommend the removal of the rough bark by rubbing with a corn-cob. The fly that lays the egg splits the bark up and down about one-eighth of an inch and then loosens the bark a little on each side of the split and deposits the egg in the place so prepared. When the borer hatches it sucks the sap of the bark till large enough to begin to eat. While in the bark borers are easily removed by inserting the point of a knife blade in the split made by the fly and turning it back. Eggs are caught in the same way. I used to be able to see where an egg was deposited on young trees, standing ten feet from the tree.

"I believe that eggs or young borers may be killed without injury to the tree by tapping the bark above them with the butt of a knife handle or with a hammer. There are washes that will prevent borers, but the cheapest and most effective way is to wrap the tree with something. Twisted grass or hay is a very good wrap. I have kept it on both winter and summer. It is also a good preventive of girdling by rabbits. As to the time when borer eggs are deposited, the season runs from May to October, all statements to the contrary notwithstanding. In 1894 I took out newly laid eggs on September 22."

Apple Tree Borers.—According to Professor Chittenden, the three larger apple tree borers are the round-headed borer, *Seperda Candida*;

the spotted borer, *Seperda Cretata*; the flat-headed borer, *Chrysobothris Femorata*.

The methods of controlling the round-headed apple tree borer are to practice clean culture, cut the larvæ out of the tree, kill them by applying kerosene wherever their castings are seen protruding through the bark, or prevent their entrance by means of impenetrable substances, such as paper and hydraulic cement, or by repellent washes made from fish oil or soft soap, with the addition of caustic potash or washing soda carbolated with carbolic acid.

The remedies are the same for the spotted and flat-headed apple tree borers as for the round-headed borers, except that for the flat-headed borer the coverings and washes should be applied farther up the tree trunks and branches, and that trap-wood may be used. It is suggested that limbs and trunks of newly felled trees which the borers attack, such as oak, maple and young fruit trees, be distributed on the outskirts of the orchard, where they should be freely exposed to the sun, so that the beetles will deposit their eggs on them. This trap-wood should then be destroyed before the beetles emerge the following spring.

Peach Borers.—Prof. John B. Smith, of the New Jersey Experiment Station, has made elaborate inquiry concerning peach borers. He says no application can be made on the outside of the tree which will keep away the borers. The proper way is to keep them out from the beginning. No young trees should be planted without being examined for borers. The trees should be wrapped with double thicknesses of newspapers, so at least fifteen inches of the trunk is covered above the ground, and the wrapping should be kept on until the middle of September. When the wrappings are taken off the trees should be closely examined for borers, and if any have got in above the paper they should be dug out. Thereafter the trees should be annually wrapped in papers put on about the middle of June. Hydraulic cement mixed with skim-milk, plastered around the tree, is cheap and effective.

Bitter Rot.—Prof. John T. Stinson, of the Missouri State Experiment Station, located at Mountain Grove, in the southern part of the state, has written a report on this subject of much importance to apple growers.

The disease, which is caused by a fungus with a long name, has

occasioned considerable loss to the apple growers of the southern states for years. During the season of 1900 it appeared in the form of an epidemic and played havoc with orchards in southern Missouri and southern Illinois. Bitter rot appears at a time when the crop is about ready for market, and consequently when the disease is difficult to control, as the practice of spraying at such a time seriously affects in many cases the marketableness of the fruit.

Observations made in several orchards disclosed the fact that bitter rot was confined very largely to highly-colored fruit growing on the southwest side of trees, where it made its first appearance, while shaded fruit was lightly attacked and but little damaged. Ben Davis, Willow Twig and Huntsman are varieties most subject to it, and fruit of old trees suffers more from it than fruit of more vigorous trees.

Spraying with Bordeaux mixture, which is said to postpone the ripening period of the fruit from ten days to two weeks, is recommended for controlling bitter rot, experiments showing that in Arkansas, in 1899, "there was 2.8 per cent. of the fruit from the trees sprayed affected by the disease, and on the unsprayed trees there was 16.5 per cent. affected thereby."

Peach-leaf Curl is a fungous disease commonly attacking the leaves of peach trees, causing them to turn yellow, wrinkled and swollen, to curl up, and later on to die and fall off. The same disease also attacks the fruit of plum trees, causing it to be puffed up and making what is known as wind-plum or bladder-plum. Prof. W. A. Murrill, of the Cornell University Station, gives a summary of two years' work in the prevention of leaf curl of the peach. The conclusion is that it can be readily controlled when proper and timely treatment is given. The orchards selected for the experiments represented a variety of fruit, conditions of soil, moisture and exposure.

The trees were sprayed with different strengths of solutions of Bordeaux mixture, potassium sulphide, ammoniacal copper carbonate, copper sulphate and lime. Of the substances employed as fungicides, Bordeaux mixture proved most useful, and the treatment recommended for peach-leaf curl, based upon these and other experiments, is as follows: Spray with Bordeaux consisting of six pounds of copper sulphate, four pounds of good quicklime and fifty gallons of water, about the first of April when the buds are beginning to

swell. Spray again when the petals have fallen, with Bordeaux consisting of two pounds of copper sulphate, two pounds of good quicklime and fifty gallons of water. If the weather of April and early May is warm and dry this second spraying may be omitted.

"The Black-knot Fungus," says William Williams, of the Rhode Island State Board of Agriculture, "is the policeman of the plum and cherry tree. It is called upon to preserve the peace of the organism disturbed by underfeeding, or overfeeding, or improper feeding, or some other affecting influence. And this it does by removing the cause, and the way it sets about this task is simple. If the process of fermentation should cease this would be a dead world.

"This fermentation in vegetable life is perpetuated by spores, and there is not a moment in which organic life is not affected by them. And now let us see how these spores, the police of the world, set about their task. Floating in the air these spores are seeking food, and as they cannot maintain themselves on healthy trees they attack weak trees. It is probable that even healthy trees are covered with spores doomed to early death because they cannot obtain food. Settling upon the diseased or weak portion of the tree they do what all life does—they send out fine, delicate roots or filaments which contain a fermentative principle that removes the obstruction and aids in the restoration of the twig or branch to health, just as a sore or suppuration does in animal life.

"If these observations are correct then it is not sufficient to remove the black-knot from the tree, for the tree says as plainly as anything can be said, that it is sick and needs assistance.

"But first of all the black-knot must be removed with knife or saw, and be sure to cut deep enough so as not to leave the least thread in the wound. Cover over the cut with lead paint, so that the water may be kept out. Varnish will answer if renewed, but be careful about kerosene.

"Be careful to sterilize the instrument, whether knife or saw, with which you extirpate or cut off the black-knot. At least take a cloth saturated with carbolic acid and carefully wipe the saw or knife before you use it on another tree. Do not forget that in cutting off the black-knot you are only destroying the effects. Study the cause, and apply the remedy or remedies necessary for the restoration of the tree to a healthy condition."

One fruit grower reports that he has cured black-knot on his plum trees by a smothering process. He coats the affected spots with a wax made of tallow, resin and kerosene in equal parts. The aim of the covering is to prevent the casting off of the spores of the fungus. When the knot enlarges he applies more wax. He says that the coating causes the seared spots to heal over and prevents the spread of the disease to other trees.

Curculio.—The worst pests that affect plum and cherry trees are black-knots (the means to remove which have just been given) and the curculio. This insect devotes its attention to the fruit and allows the tree to devote its energies to the production of wood and increased growth. Generally if the plum or cherry orchard is surrounded by a chicken-tight fence and the poultry is kept confined to the orchard until the danger of curculio is past the insects will not sting more of the fruits than should be taken off for the best results, and this is a cheap way of keeping the little Turk in subjection. Spraying the trees with arsenical solutions is sometimes effective, but very often the foliage is hurt by the spray. Spreading a muslin sheet under the tree and giving it a sudden jar is a very good way to catch the insects.

The Codlin-moth can be exterminated by spraying in the spring and destroying the wormy apples in the fall. The most effective way to destroy wormy apples which fall from the trees is to let sheep or hogs run in the orchard and eat them. Hogs root unless they are ringed, and no one puts rings in a hog's nose nowadays, and this makes their presence objectionable. Sheep eat apples greedily and are much more cleanly than hogs. If they are turned in the orchard for a day or two they will eat every fallen apple, and they should be turned in every week during the growing season—a few every day. Soon after the apples fall the worm emerges and buries itself in the ground, to remain until the next spring when it appears as a full-fledged codlin-moth ready to damage the crop of the next year.

Thorn apples are almost invariably filled with the larvæ of the codlin-moth and the trees should, therefore, be cut down unless they are kept for ornamental purposes, when they should be thoroughly sprayed several times in the spring. The damage done by the codlin-moth is incalculable and costs the fruit growers of this country

a thousand times more than the San Jose scale, although few stop to consider this fact.

The Tent Caterpillar.—One of the commonest orchard pests, after the codlin-moth and curculio, are the tent caterpillars. They work and build their nests so conspicuously that there is no necessity for missing them, and their presence in an orchard is an open and public advertisement of carelessness on the part of the owner.

These insects come in increasing numbers for a series of years, and then almost disappear only to begin over again. They infest wild-cherry, crab-apple and osage-orange trees as well as orchard trees and should be hunted down wherever they make a stand.

A good way to destroy them is to locate their nests during the day and then burn them in the evening. To burn them take a pole and tie over one end a bunch of old rags, making a compact ball the size of a baseball or larger. Soak the ball in kerosene and set it on fire. With this torch burn the caterpillars as they retire to their nests at stated times. Do not hold the torch steadily under the nest, as to do so would kill the branches to which it is fastened. If the flame is passed slowly back and forth just below the nest it will have the desired effect without injuring the tree.

It is also a good plan to shoot them off the trees, using powder only, a thin oiled paper being put in the cartridge over the powder to hold it in. The burning of the powder and the shock of the explosion kills all the worms.

Body-blight on pear trees is supposed to be caused by the fungus of apple-canker, *Sphaeropsis Malorum*. It is a bad trouble in a pear orchard, as it attacks the bark on the trunk and the larger limbs, causing it to loosen and die. The blight checks the tree badly, so that it is dwarfed and finally killed.

When it appears on a pear tree it should be fought from the start. The roughened spots should be scraped quite thoroughly, at least enough to remove all sheltering scales of bark, so that the fungus may be reached. The scraped spots may then be painted with Bordeaux mixture. If the spots do not come out smooth and clean repeat the painting. When this blight appears it is well to paint all the trees, going over the trunks and large limbs thoroughly with the Bordeaux.

Rabbits.—As soon as the weather gets sufficiently cold for frosts to

kill off the green growth, all your trees should be protected from rabbits, as serious damage may be done.

A cheap way is to wrap cloths around the stem commencing close to the ground and wrapping at least two feet high, tying at the top and bottom so that the wind will not blow off. A still better mechanical protection is to take screen wire cloth 26 or 28 inches wide, cut in strips sufficiently wide so that when rolled it will fit entirely around the tree. This will not only protect the tree from mice and rabbits during the winter, but can be left on and will protect from borers in the summer, and will not need to be taken off at any time until it rusts away. It costs more at first, but considering all of the advantages is really cheapest in the end.

The objection to washes of any kind is that the majority of them must be repeated after every hard storm of rain in order to be effective.

Blood of any kind, or cold grease, will keep rabbits away, but must be repeated several times during the winter. One of the best washes is glue, asafetida and whitewash. The glue helps to make the wash lasting, and usually one good application will answer, while it will be an exceptional case where more than two will be necessary during the winter. The objection to paper is that it prevents the air circulating as freely as it ought for the best thrift of the trees, and if left on all winter the bark will become very tender.

How to Treat Trees Wounded by Ground Mice.—It sometimes happens that mice will gnaw the bark of young trees during the winter. This is especially the case if the mulch of coarse manure is piled up too closely around the trunk or stem of the trees. The mulch often affords them a protection under which they shelter and almost before one is aware the mischief will be done. As with much else of this kind, prevention is better than cure. But if done, a little care in good season will often save the trees.

If not entirely girdled, mix cow manure and moist soft earth well together and bind in the wound, covering entirely. Use a broad band of cloth fully wider than the wound of the tree, fasten securely and let remain on until it rots off. When the tree is completely girdled, cions about one-half inch in diameter—either one or two-year-old wood will answer—should be secured. Cut them into proper length, long enough to readily reach a little above and a little below the

wound, and sharpen into a wedge form at both ends, making the wedge nearly or quite an inch long. Insert the wedge-shaped ends into incisions made with a thin half-inch chisel into the sound wood above and below the wound, thus bridging the injured portion of the stem of the tree. Three or four of these cions should be inserted in this way, depending somewhat upon the size of the tree. In this way the sap can be conveyed to the top.

The cions should be cut long enough so that by bending somewhat they can be sprung into place and both ends be held in place by the slight bend. The incisions made with the chisel should be made at as sharp an angle as can be without tearing out. When completed the incisions and all of the exposed surface should be protected from the air and moisture with wax, as in grafts. With care a tree that would otherwise be killed may be saved in this way.

The Woolly Aphis, in the spring and summer, may be found on the bodies and branches of shade and orchard trees, especially the apple. At this time there may be found very small insects of a yellowish-green color, some of them winged and others wingless, and at the same time if we notice very closely we find what appear to be very small white specks upon the bark. By the use of a magnifying glass it will be found that these small specks are the young aphididæ, with a very limited amount of wool upon their bodies. As the season advances the wool becomes more apparent, clinging comparatively close to the bark until late in the fall, when the insects leave, a great many taking wings and flying away, while a part of them probably descend the trunk of the tree to the ground. The wool at this time hangs quite closely to the bark, and may even be blown off by the wind. Also our attention may be called to a tree thus affected by its sticky, pale appearance. The leaves may have lost their luster and deep green color and look dingy and dirty. We may not be able to detect the aphis. It may be springtime and too early for them to show on the body of the tree. Examine the small roots and there find what appears to be spots of mold, possibly on the smooth bark of the root; or we may find a root covered wholly, or in part, with wart-like excrescences in spots. Either of these conditions is indicative of the presence of the aphis.

CHAPTER XVI

CHICKENS AND EGGS

Waste Products of the Dairy, Garden and Orchard as Poultry Food—Sunshine and Shade—Food, Water, and Exercise—Choice of Breeds—Laying Hens and Eggs—Their Proper Care—Winter Poultry House and Food—Care and Preservation of Eggs—Breeding Poultry—Mother Hen, Incubator and Brooder—Chicks and Their Care—Meat and Feathers—Diseases and Pests of Chickens—Their Treatment and Eradication.

Poultry may be raised with the greatest economy on the large farms of the country, where there is unlimited range, an exhaustless supply of insects and worms and an abundance of seeds and grains going to waste, which poultry alone can utilize. Under such circumstances fowls take care of themselves so well and are so energetic in seeking their food that they are either forgotten and allowed to shift for themselves when they really need attention and assistance, or they are regarded as a nuisance because they sometimes do a little damage. When fenced away from the gardens and flower beds fowls do little damage and cause scarcely any annoyance on a farm. On the other hand they do an immense amount of good in the protection of crops by the destruction of injurious insects, larvæ and worms.

Sometimes it is advisable to divide the flock into colonies and place these at different points upon the farm in order to secure additional range, to remove the birds temporarily at a distance from certain crops, or for other purposes. In this case cheap, light and easily handled colony houses may be constructed and placed where the fowls are desired to range. After being confined in these houses a few nights the birds will adopt them as their habitations and return to them.

Dairy Products as Poultry Food.—There are certain special lines of agricultural operations with which poultry raising may be advantageously connected. In dairying there is usually a large quantity of skim milk or buttermilk which may be utilized to furnish a considerable part of the poultry ration. There is also much food to be gathered by the fowls about the stables, manure piles and pastures which would otherwise go to waste.

Waste Fruit as Poultry Food.—Upon the fruit farm fowls are also of advantage. They keep down the insect pests and may have a free range the greater part of the season without the possibility of doing any damage. Plum growers have found poultry especially helpful in keeping down the curculio, and even apples have been considerably benefited. If small fruits are injured they may, of course, be protected by confining the fowls for the limited season when the fruit is ripening. The waste fruits either in winter or summer are a welcome and valuable addition to the poultry ration.

Garden Products as Poultry Food.—The market garden also furnishes a large amount of waste products which may be utilized for poultry feed. There are the waste lettuce, the small heads of cabbage, the unsold beets, carrots, potatoes, peas and corn, which cannot be marketed for any reason, the waste of the small fruits, etc. If properly cared for, the hens will bring a steady and reliable income during the winter months. Dried clover and other green feed, roots and tubers should be saved for them during the summer. These should be steamed and fed with the mash, or cabbages and beets may be fed raw. A catch crop of buckwheat or oats and peas will furnish much food at little expense. Bran, meat, meal, wheat screenings and oats purchased for poultry will bring good returns in eggs, and will also add materially to the fertilizer supply.

Cleanliness, sunshine in winter and shade in summer are at the foundation of success with poultry. Everyone knows what cleanliness is, and most all know of some good disinfectant to use and apply after everything is clean. Kerosene oil and crude carbolic acid are the cheapest and most effective.

It is a mistake to be constantly feeding poultry special preparations to ward off disease. The surest preventives are clean quarters, simple, wholesome food and plenty of sunshine in winter, as well as shade in summer.

Shade in Summer is particularly essential to the growth and general welfare of poultry. The orchard is the poultry's paradise, and the orchard also is greatly benefited by their presence; so keep the two combined, and if you are careless about the growth of your fruit trees by not cultivating them and keeping every weed down, do this for the sake of your poultry, and you will have done your trees an immense amount of good. Fowls yarded up for breeding purposes must be accommodated with abundance of shade, and all such yards should be planted to good shade.

In the absence of trees temporary shade should be supplied. During the month of August sow a little patch of rye in a convenient place for the chicks; this will furnish pasturage for them all winter and spring. Better still, sow a piece of ground to alfalfa clover, for this is the best green feed that can be found for poultry.

A low shed, with a thick roof of straw or branches cut with the leaves on, makes a good sort of shade. The shed may be merely posts four feet high with strips spiked on to support the roof. It should stand in some place where the air can circulate freely, and where there is no chance for surface drainage to make it wet and muddy during rainy weather. If such a shed is made, and the surface under it is made fine and mellow by spading it over once or twice, the hens will luxuriate in the cool earth, in which they will soon dig wallowing places, and not only be healthier but will produce more eggs than they will if compelled to find shelter along fences and under chance weeds where whatever air that may be moving cannot reach them.

Food, Water, and Exercise.—It would be a paying investment on the farm to devote an acre to growing special poultry feeding stuffs. Millet, Kaffir corn, sunflowers and popcorn could be grown on such a patch, and supply enough grain for a large flock of poultry at a low cost.

Millet is one of the best feeds for poultry, old and young, and is especially valuable for young chickens. It will pay a farmer to sow a small patch of millet especially, so as to have the seed for his hens.

Kaffir corn is a good feed for chickens of all ages. It yields forty bushels of seed to the acre and is as easily grown as corn. The stalks, after the heads are cut off, make good rough feed for cattle.

Grain, vegetables and green food enter largely into making up the daily ration for poultry. Potato parings and small potatoes, cabbage and turnips may either be cooked or may be fed raw, being chopped up fine. During autumn a piece of ground may be sown to rye to furnish pasturage in fall and winter. Alfalfa clover is perhaps the best green food for poultry, and every poultryman should have a piece of ground set apart for alfalfa. The hay, when cut green and well cured, is in first-class condition to feed poultry, either dry or steamed, and will add largely to egg production.

Green bone if fed in moderation as a part of a balanced egg ration is very good; if fed to excess it may become very bad, especially if care is not taken in warm weather. The fowls may be injured by feeding bone which is rancid or even putrid.

Bear in mind also that hens and roosters are addicted to the natural habit of drinking when they have access to water. Keep them supplied with a troughful of pure, fresh water into which drop a few old nails occasionally. This will furnish iron in about the correct quantity. In winter it is recommended that the chill be taken off the water.

Use only glazed dishes for drinking vessels in the poultry yard. Porous dishes and wooden ones become infested with germs of all sorts. Tin dishes rust out, and leak, and poison the fowls. Iron vessels are quite as bad as wood and tin and porous ones. Broken fruit jars are easily cleaned, and they are so shaped that the fowls cannot get their feet into them to dirty the water.

The digestive organs of the domestic fowl are a rather delicate muscular contrivance, and the more these muscles are strengthened by exercise the better, if in the natural manner—scratching—if there is something for them to scratch for. On this subject of exercise a Virginia farmer gives some sound advice. He says: "After some experience in growing fowls I have observed that they will do much better when they can have the run of a stretch of woodland than when confined in close, unhealthy quarters, and more especially is this true during the hot weather. We have a woodland slope on the north side of our house, and the fowls all go into it to scratch and give but little trouble about the premises. They find gravel and lime there, which they cannot do when penned up in small enclosures. Then they look so much cleaner and better in appearance that it has a good effect when you wish to market them."

THE CHOICE OF BREEDS

A mistake is often made in selecting fowls of a breed that is not suited for the purpose for which they are to be kept. If egg production is the all important point it is a mistake to select a breed of fowls that is not noted for this product. If on the other hand meat is the chief object an expensive mistake will be made if any but the heavy-bodied fowls are chosen. The small, active, nervous, egg-producing breed cannot compete with the larger for meat production. Then, too, if fowls are desired for both meat and egg production some breed of the middle class may be chosen, such as the Plymouth Rock, Wyandotte, Javas, etc. These, while they do not attain the great size of the Asiatics, are sufficiently large to be reared profitably to supply the table with meat and at the same time have the tendency for egg production sufficiently to produce a goodly number of eggs during the year. Records of these breeds show that in egg production they have been hard to excel, but as a whole they do not compare with the so-called Mediterranean class which have such great tendency toward egg production.

When choosing a breed for layers, or in fact any purpose, it is well to consider the cost of raising and keeping the different breeds, as, for instance, a Leghorn can be raised to maturity for about one-half that of the Asiatic varieties.

Either Plymouth Rocks or Wyandottes make the best breed for the ordinary farmer. They are excellent layers, are hardy, active, good foragers, will stand confinement fairly well, come to maturity early, are large enough for a market fowl and have the yellow legs and skin demanded by the best trade. They also make good mothers. The above is upon the authority of George H. Hammond, of Hotchkiss, Colorado.

Minorcas are a comparatively new breed in this country, having first attracted attention about fifteen years ago. They belong to the Mediterranean class along with the Leghorns, Spanish and Andalusians. They come in both black and white, but for some reason the white variety does not seem to be very popular. In size they are larger than the Leghorns and perhaps a little smaller than the Spanish. They are noticeable on account of their very large combs, these being larger than those of any other breed. They produce

very large white eggs and as many of them as of any other breed known. They are held to be somewhat sensitive to cold and care must be taken of them or their combs will freeze during the winter. They are known as "the business hen," because they are so prolific, and when eggs are sold by weight, if ever that time comes, they will take the lead of all other of the egg-leading breeds.

The black variety is not attractive as a table fowl, but the white skin of the white variety makes it a very acceptable bird for table use. Minorcas are not widely distributed, nor have they ever been boomed as have other breeds, but they are growing in popularity and every year increase in numbers. For the southern states there is not a better fowl bred, as they do best in a warm country.

Another authority prefers for all-around purposes the Black Java. It is claimed that for early maturity and egg production she is not excelled. The Java is of the same make-up as the Plymouth Rock, and might be called the Black Plymouth Rock. The Java is of American origin, the same from which the Plymouth Rock sprung, being crossed with the American Dominique.

As a general rule it may be said, when selecting breeding stock, choose hens more than one year old. Chicks from such hens are hardier and grow faster than those hatched from the eggs of pullets.

To give the characteristics of a laying hen is rather hard, as neither shape nor color is any guide. However, the active, wide-awake, bright-eyed hen is always one which helps to fill the egg basket.

For eggs for domestic use there should be no roosters among 300 hens. For eggs for hatching select thirty of the best layers which are good specimens of their breed, put fifteen in each of two pens, with a grass run, and put a No. 1 rooster with each pen of fifteen hens.

Commercial poultry certainly pays better than fancy poultry to the average farmer. Before one can breed the "fancy" he must be above the average; yet it will pay any one to get above the average and keep pure bred fowls. Keep your flock pure and uniform and you can sell eggs for hatching at a good advance over market prices, even if you cannot compete with the professional fancier.

LAYING HENS AND EGGS

Having decided upon his specialty—whether he will go into the business of raising laying hens, of selling his poultry outright in the

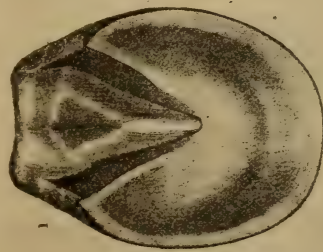
meat market or of breeding fancy stocks—the farmer acts accordingly. This section is devoted to the egg producer.

Again the poulterer should keep his specialty ever in mind, long experience having proven that the keeping of males with a flock of laying hens whose eggs are not to be hatched is an entirely unnecessary waste of feed. It has been proven time and again that laying hens produce more eggs when there is no cock running with them than they would if mated to the most vigorous cock that ever crowed. The New York Experiment Station and other stations gave this matter exhaustive trials, and in almost every case there was a marked increase in the production of eggs when the flock was composed of hens alone.

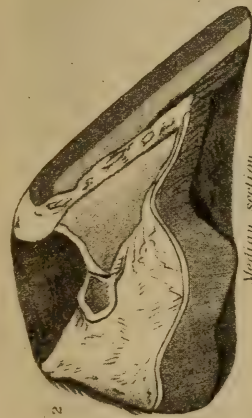
Another most important point: The egg produced by a hen that has no mate will keep many times longer than one from a hen that has mated with a cock. The unfertilized egg is merely a combination of shell, white and yolk, without life or vital force any more than would be in the same composition if mixed in the laboratory of a chemist. Mate the hen and at once there is a change which no magnifying glass nor chemist's analysis can find, but which has transformed the whole nature of the egg. In warm weather this life germ begins to develop as the temperature rises.

Although the process is slow and so imperfect that it would never produce a chick, yet it produces the sort of an action that destroys the life of the egg, and in this destruction comes decomposition and decay, and the result is a spoiled egg. If the hen had not been mated and the egg had not been fertilized this process would have been impossible, and the egg would have kept many times as long before becoming spoiled. For preserving, unfertile eggs are worth much more than those from mated hens, and for the production of eggs the presence of a cock is not only unnecessary but decidedly detrimental to their keeping qualities.

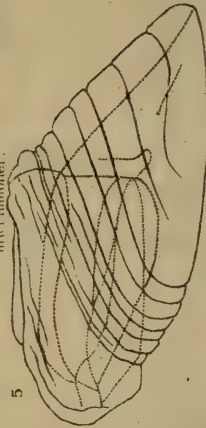
Fall Feeding.—It is not always during the winter that eggs are the most profitable, for prices are frequently high during the fall months. To obtain the early fall supply one must depend upon intelligent feeding just as in the winter. The mistake is frequently made of keeping hens almost wholly dependent upon what they pick up on the range during the fall, thus prolonging the period of moulting. Start in by mid-September and feed all the hens that are expected to



*Fluted hoof,
after fluting.*



*Median section,
after fluting.*



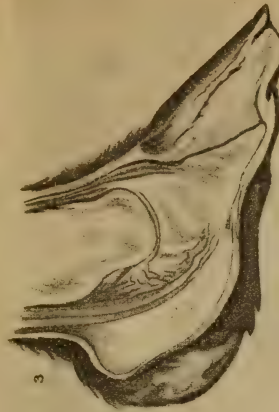
*Skeleton of hoof showing cavity occupied by the hoof,
(Original)*



*Same hoof as shown in fig 1,
(Original)*



*Same hoof as shown in fig 5,
(Original)*



*Median section,
after fluting.*



*Bottom of hoof shown in fig 6,
(Original)*

From Special Report on Diseases of the Horse—United States Department of Agriculture

FOUNDERED FOOT.

The chief evidence of this trouble is a contracted hoof, with internal inflammation and fever of the foot. It may come from rheumatism, faulty shoeing, or be the effects of other diseases of the foot. The above plates illustrate its effects upon the foot and hoof.



From Special Report on Diseases of Cattle and Cattle Feeding—United States Department of Agriculture

SKELETON OF THE COW.

The skeleton of the adult cow, as the illustration shows, is built for strength alone. It usually carries so much weight, however, that the bones may be broken by violent falls, by fighting or by crowding of the animals. The roots of the horns, with adjacent bones, are often fractured, as well as different portions of the pelvis, or back of the body. To locate the fracture one should first of all study this diagram of the skeleton.

lay at least twice daily, and depend largely on wheat, bran or shorts of the kind that is white, rich and well grown. Give corn once a day. Chop up some beef, a few vegetables and mix with the shorts, feeding it to the hens while warm. Give this feed at night. It will assist the hens in moulting and those that have not begun to moult, or are through with it, will produce eggs regularly.

It is not a good practice to feed laying hens more than they will eat, but during moulting time no harm comes from feeding them all they will eat and a little more. The young chickens cannot possibly be induced to eat more than is good for them, so any surplus feed given the flock will go to help the youngsters make size and increased vigor. Liberal feeding and full liberty are both good things for poultry in the fall.

The Winter Poultry House.—The greatest profits in farm poultry are to be attained during the winter months. In order to take advantage of this opportunity it is necessary that the poultry be properly arranged and receive the right kind of management. One of the greatest troubles in the past with farm poultry has been that the general farmer is too economical in furnishing winter quarters for them. It matters not how well poultry is fed, or how good the quality of feed is, or how great the variety, if fowls have to wade around in the snow and hunt the sunny side of the barn to warm up the feed given them. The first thing is to provide proper quarters, the second is care and attention. There are times during the winter when fowls must be confined to their winter quarters, and these quarters must be such as will properly accommodate them.

Properly to arrange winter quarters for poultry it is necessary to have three different apartments, one of which is a roosting place proper; another is a day house, or a scratching room, and the other is a yard well fenced with poultry netting to confine the fowls in medium fair weather and keep them from scattering and becoming exposed. This yard, of course, must be connected with the house, that they may choose between the two, to either stay in the scratching room or outside.

The roosting house proper need not be large, and indeed should not be large. This apartment should be just large enough to allow the chicks roosting space and nothing more. This is true from the fact that the heat of the fowls at night will keep them comfortably

warm, when if roosting in a large room or building they would not receive this benefit which is of so much importance. The roosting house should not have any more glass in it than will allow of enough light for the fowls to see to get on the roosts. This apartment may be so arranged by the use of ventilators that enough fresh air can be given at any time to suit the weather. Glass is a good conductor of heat in day time, and at night a conductor of cold, so keep it away from the roosting quarters.

Now we come to the day house, or scratching parlor. This room should be also tight—no shed with the south side open. It should be about four or five times larger than the roosting room. On the south side there should be plenty of glass, the more glass the better, and if all that side is glass it is still better. An earth floor for this part is best, and a board floor for the other. This scratching parlor must have adjustable ventilators also. In this apartment the fowls should be confined during all bad weather, and they should be furnished with straw three or four inches deep with grain scattered in it, so they can be kept busy working for their “grub.”

The yard, which should be on the south side of the building, must not be a small pen by any means, but it should be large enough to make the fowls feel as though they were at liberty—perhaps a fourth or half acre of ground. The roosting room and the scratching room may be in one building, but there should be a good tight partition between. The roosting part should not be used for any other purpose except the nest boxes, which should be placed under the dropping boards. This room should be cleaned every morning and left in neat order, that the hens may step in to lay eggs.

Simpler Houses.—If you cannot afford a winter poultry house made by double walls of boards and paper, or stone and brick, make one warm with straw or marsh hay. Build a frame of old boards or poles around the house as it now stands and stuff the straw between them—or a house banked to the eaves with manure will be warm. Though neither of these methods of procuring warmth will give beauty they will give comfort, and comfort not beauty is what makes the money in winter eggs.

If no other way of procuring a warm hen house is at hand take a hay-knife and cut a square out of a straw stack, having an opening for a door on the south front—this may have a door fitted in. In

another opening fit a piece of glass or cotton cloth to let in light and you have a house that will be warm. It will also be comfortable when rain comes or the snow melts if the amount of straw left above the cut-out space is thick enough to make a water-tight roof, which must be had if the place is to be a healthful one.

Winter Food.—Do not let the fowls out of their warm roosting quarters much before nine o'clock. Then make them a hot breakfast by scalding with boiling water grain that is ground up fine—oats, corn, or wheat, or Kaffir corn, either of which may be mixed with bran. It is not necessary thoroughly to cook the feed, but pour the boiling water on it, thoroughly stir it and put in just enough water so that when well stirred up it is a dry, crumby mass, and by no means make it sloppy. Give them a good breakfast of this, but not quite as much as they will eat. Always use a well-made trough to feed this in. Feed nothing during the day but a little grain scattered in the straw, as mentioned, and about four o'clock in the evening give them all they will eat of good, sound grain, changing variety as often as possible. Feed meat scraps once a week, grit and crushed oyster shells all the time, good fresh water—no ice in it—twice a day, and allow a dust bath always at their pleasure.

If soft-shelled eggs appear in the poultry house during the winter the proper thing to do is to cut down the feed—the morning feed, not the one which is given in the afternoon. Soft-shelled eggs are almost positive proof that the hens are too fat, and the best way to get rid of the fat is to make the hens work it off in the scratching material. For the morning feed not more than one handful of wheat to ten hens should be given as long as soft-shelled eggs are found in the nests.

On the whole cabbage appears to be the best vegetable food for laying hens in winter. Carefully conducted experiments have clearly demonstrated that it is superior to cut clover. The best way to feed the cabbage is to suspend it by a cord from the ceiling of the poultry house, and let the hens pick it to pieces. It is often recommended to place it high enough above the floor to compel the hens to jump up a foot or more in order to reach it, but we should prefer to place it at a convenient height for the hens and provide other ways for giving them exercise.

Cut Bone and Charcoal.—One pound of cut bone for a dozen hens a

day, which should not cost over one cent a pound, will produce more eggs than five times as much grain, because the cut bone is complete in egg-making substances, while the grain is largely deficient in many respects. Some persons affirm that it does not pay to procure a bone cutter for a small flock. That is a mistake. Bone cutters are now cheaper than many ordinary garden tools, and are strong, durable and efficient. The cost of the bone cutter is soon regained in the increased number of eggs laid. It is almost indispensable to success, no matter how small the flock, for no one should keep a flock unless fully determined to secure the largest profit possible.

The great saving of bones and meat and the utilization of materials that could not be appropriated as food for fowls without their use have given bone cutters a place on all well regulated poultry farms. They are sold at from \$5 to \$10—a price which places them within the reach of all—and they have added to the profits of poultrymen, farmers, butchers and poultry-supply houses.

Your fowls need more or less charcoal, and charred corn on cobs is an excellent way to give it to them. Place a few ears in the oven and keep them there until they are burned black to the cob. Corn charcoal can thus be made as wanted, and the older and dryer the corn the easier it will be to make it and the better it will be. Feed to the fowls what they will eat of it, for they will take but a small portion of it, more especially at the first feeding. As a corrective of injudicious feeding and as a remedy for bowel trouble and preventive of indigestion charcoal has but few equals. It may be fed every other day.

Effect of Food on Consistency and Flavor. — Any one who has observed eggs closely has noticed that some eggs have what poultrymen call greater consistency than others. That is, out of a dozen eggs bought at a store half may have thick whites, and yolks that stand up in an almost hemispherical shape when broken and turned out of the shell, while the other half will have whites and yolks so thin that they will spread out thin and wide and be almost flat.

This is the effect of the feed given the hens producing the eggs. Hens that are allowed to pick up their living about the manure pile produce eggs with thin yolks and whites, and these eggs are invariably insipid and tasteless, and when boiled or poached are not exactly appetizing. There is a flavor about such eggs that is not altogether

pleasant in any case, and often it is positively repulsive to one who understands that this flavor comes from eating impure feed.

Take a lot of hens and feed them milk and grain and their eggs are firm and consistent, and they have a flavor that makes them relished by the most fastidious. The grit and grain furnish the mineral constituents and the albuminous portion, in connection with the milk, and the combination is one that makes good eggs. Hens fed exclusively on grain do not produce eggs of the best flavor, but their eggs are infinitely better than those from hens that must depend altogether on themselves for their living.

The quality of eggs depends altogether on the feed the hens eat, and where this is understood consistent eggs are valued as being worth twice as much as those lacking consistency.

"Housewives who use many eggs, and all who habitually eat them boiled, also know that there is much difference in the flavor of even those which are undeniably fresh," says a United States Department of Agriculture bulletin. "There is a very general belief that the flavor is influenced by the feed which the hens receive and the materials possessing strong flavors, like onions, turnips, etc., impart an injurious flavor to the eggs. The truth of this belief was shown by recent experiments at the North Carolina Station.

"Chopped wild onion tops and bulbs were fed to hens and the length of time before there was a change in the flavor of the eggs was noted, as well as the length of time which must elapse after onion feeding was discontinued before the objectionable flavor would disappear. At the beginning of the trial a half ounce of chopped onion tops per head daily was fed to twelve hens of different breeds. Repeated tests did not show any onion flavor in the eggs until the fifteenth day when it was distinctly noticeable. The amount of onion fed was doubled for four days and then discontinued.

"The eggs laid while the larger amount of onion was fed were so strongly flavored that they could not be used. After discontinuing the feeding of onions the flavor became less noticeable, and in a week the eggs were of normal flavor. The main point brought out by the tests was that flavor can be fed into eggs. Therefore, it appears that to insure finely flavored eggs it is necessary to restrict runs so that no considerable amount of food which will produce badly flavored eggs can be obtained.

"Some years ago the New York Cornell Station, in studying the effect of nitrogenous versus carbonaceous food for poultry, reported observations on the effect of the different rations on the flavor of eggs. One lot of fowls was fed a mixture of wheat shorts, cotton-seed meal and skim milk, another lot cracked corn and corn dough. The former ration contained much more nitrogen than the latter. The hens fed corn laid fewer eggs than those fed the nitrogenous ration, but the eggs were larger. The eggs produced by the nitrogenous ration were of a disagreeable flavor and smell, had a small yolk and did not keep well."

Egg-eaters and How to Cure Them.—The hen which habitually lays her eggs on the floor of the poultry house or in the scratching pen should be killed. If she is not made away with the owner will find a flock of egg-eaters on his hands before the winter is over. A certain proportion of the pullets when they first begin to lay will refuse to use the nesting-boxes. If caught when discovered making a nest on the floor and penned in one of the boxes it will usually break up the habit of depositing the egg on the floor. But one will be found now and then which will obstinately refuse to lay elsewhere but on the floor. When all other persuasion and argument fail the hatchet will be the only remedy left.

Undoubtedly the habit begins in most cases by the accidental breaking of an egg on the floor or in the nest, but it rapidly spreads among the flock until a large proportion of the eggs laid are purposely broken and eaten by the hens. The heavy breeds of fowls are most subject to this habit because they more frequently break their eggs by stepping upon them than do lighter birds. When an egg is broken it is too tempting a morsel to be left in the nest. The hen not only eats it but often carries large pieces of the shell about the house or grounds, pursued by other members of the flock, each of which wants a portion. In this manner a number of individuals soon learn how appetizing are eggs and egg shells, and each in turn becomes a teacher to others.

It is plain that whatever conditions contribute to the breaking of eggs in the nests may be considered as causes of the habit. Thin-shell eggs are easily broken, and hence a deficiency of shell-forming constituents in the ration may be the cause. In other cases an egg may be broken for want of sufficient straw in the nest to protect it from direct contact with the wood.

To guard against the formation of the egg-eating habit the fowls should have plenty of lime, oyster shells, bone, or similar substances to ensure a firm shell upon the eggs. The nests should be properly supplied with straw and artificial nest eggs should be used. In this way the danger of breaking eggs is reduced to a minimum. It is also well to have the nests rather dark so that if an egg is accidentally broken the hen will not discover it.

When the habit has been once acquired these precautions are not always sufficient, and it may be necessary to construct the nests so that there is just room enough in them for the hens, or so that the eggs will roll beyond the reach of the fowls. Some people place artificial eggs in the nests and about the house so that the hen may pick at them and get the idea that they are no longer able to break egg shells. Others blow out the contents of a few eggs through a small hole in the shell and fill the space with a paste consisting largely of mustard, capsicum, aloes, or other disagreeable compounds, and leave these where the hens will find them. Under any circumstances it is best to remove the egg-eaters from the remainder of the flock, and unless they are very valuable to kill them for the table.

Care and Preservation of Eggs.—There are general rules which must always be followed in the care and preservation of eggs, but these rules, as all special directions and recipes, apply only to infertile eggs. No method will succeed with fertilized eggs.

1. For a thing which seems well protected from odors and gases an egg is extremely sensitive to them. Eggs should, therefore, be kept in a good atmosphere.

2. Keep the eggs as near forty degrees as possible, but seventy is not too high. In other words, keep them in a cool place in summer and do not let them freeze in winter. The cooler you keep them the better.

3. Eggs, too, which are kept longer than a few days should be turned frequently. When an egg rests in one position too long the yolk sinks to the bottom of the shell, the air works through the pores of the shell, attacks the animal matter (the yolk) and decay sets in. The turning of the eggs has been found to be the most practical method of avoiding this, and should be done at least twice a week. For this purpose either a box or turning tray should be provided.

4. Assort your eggs when taken out for sale, separating the dark

ones from the light ones. Some markets prefer one kind and some another. Boston prefers brown eggs, New York white, Chicago restaurants want brown eggs to boil, while most private families prefer the white.

5. Wash them clean in warm water before preserving, and do the same when taking them out.

Although we have given several methods simply to lay them before our readers we recommend only the method of placing eggs on racks, turning them twice or three times a week, and keeping them in a cool place. We term this the rack method.

Special Preservatives.—For many years experiments all over the world have been conducted to determine what are the best artificial preservatives for eggs. As there is so much difference of opinion on this point we give some of the most important results as reached especially by some of the experiment stations of the United States.

A few of the methods of packing eggs dry for keeping have been tried at the New York Experiment Station and reported upon. When fresh the eggs were wiped with a rag saturated with fat or oil which had been mixed with some antiseptic, and were packed tightly in salt, bran, etc. Eggs packed in salt during April or May, which had been wiped with cottonseed oil to which had been added boracic acid, kept from four to five months with a loss of nearly one-third, the quality of those served not being good. Eggs packed in bran after the same preliminary handling were all spoiled after four months. Eggs packed in salt during March and April, after wiping with vaseline to which salicylic acid had been added, kept for four or five months without a loss; the quality was much superior to that of any ordinary limed eggs. These packed eggs were kept in a barn cellar, the temperature of which varied from sixty degrees to seventy degrees Fahrenheit, and each box was turned once every two days.

Of the many methods adopted for preserving eggs experiments made at the North Dakota and Montana Stations go to show that the water glass method is very successful. Water glass is a very cheap product, that can usually be produced at not to exceed fifty cents per gallon, and one gallon would make enough solution to preserve fifty dozen eggs, so that the cost of the material of this method would be only about one cent per dozen. Water glass is sodium and potassium silicate, sodium silicate being usually the

cheaper. If wooden kegs or barrels are to be used in which to pack the eggs they should first be thoroughly scalded with boiling water to sweeten and purify them. In preparing the water glass use only pure water that has been boiled and allowed to cool. Pack only strictly fresh eggs and set them away in a cool dark place; a dry cellar will answer.

In reporting its experiments the Montana Station states that the mixtures used to test the relative value of salt and lime mixtures and water glass were:

No. 1.—Lime, fresh, three and one-half pounds; salt, four and three-quarters pounds; water, eight gallons.

No. 2.—Water glass, one part water glass to eighteen parts water.

The eggs remained in the solution for six months. When examined the water glass was found to be the best pickle, although the lime and salt served its purpose very well; still the whites of the eggs preserved in this mixture were much more watery than the whites of those preserved in the water glass. These were difficult to distinguish from fresh eggs, since the white was quite firm and the yolk stood up upon it just as though fresh.

Another advantage claimed for the water glass was that it did not seem to affect the shell of the egg as did the lime mixture, eggs from the lime and salt mixture being much more liable to crack either in cooking or handling.

Recent experiments with several kinds of egg preservatives have brought out the strong points of vaseline and lime water. The eggs are coated with vaseline and placed in lime water. It is reported that several cases thus treated came out in first-rate condition in February, having been stored in July.

Twenty grains salicylic acid in one gill of cottonseed oil (or lard) is also given as a composition for greasing the eggs slightly in order to prevent evaporation before packing.

Experiments have recently been made in Germany on the comparative excellence of different prescriptions for preserving eggs for long periods. Fresh eggs laid in June were subjected to the various treatments till the following February—eight months. Of one hundred eggs treated in each manner a certain number were found to be addled as follows: Preserved in salt water, 100 bad; wrapped in paper, 80 bad; bathed in a mixture of glycerine and salicylic acid,

80 bad; rubbed with salt, 70 bad; covered with paraffin, 70 bad; plunged for fifteen seconds into boiling water, 50 bad; plunged in an alum solution, 50 bad; plunged in a salicylic acid solution, 50 bad; varnished with silicate of potash, 40 bad; varnished with collodion, 40 bad; covered with lard, 20 bad; covered with vaseline, 0 bad; preserved in lime water, 0 bad; preserved in a solution of silicate of potash, 0 bad.

BREEDING POULTRY

Whatever object the farmer may have in view, whether eggs or marketable poultry, it will be to his advantage to have well-developed, fully matured birds. And he cannot have such birds without giving them time to attain their growth. It will not be necessary for him to do all his hatching in March, or even a considerable portion of it, but a brood or two brought out at that time will be an object lesson which will have no little weight in keeping him from the other extreme.

As has before been stated every farmer or poultry raiser should have a place where he can separate a few of his best hens for breeding purposes. In most cases seven or eight hens will lay all the eggs wanted for hatching purposes and then only one male is needed, and the keeper can afford to buy one of the better quality and make more rapid progress in the improvement of the flock.

An Egg Tester is quite a useful contrivance and as it can be bought for fifty cents or less no one who raises chickens should be without one. In the early spring when fertile eggs are scarce and broody hens are in great demand it will be often found that not more than half the eggs will hatch. If this can be ascertained on the eighth day all the fertile eggs can be given in charge of one hen, when two have been set on the same day, and the other hen furnished a fresh lot. If a practice is made of setting the hens in pairs it easily can be seen what a saving of hens this will be, as well as gain in the size of the broods. For when you know to a certainty that a hen has a nestful of eggs under her, every one of which contains a live chick in process of development, you can safely calculate on good hatches if the hen and her owner do their duty.

But no one can tell until the egg has been tried whether it will be fertile. After the egg has been under a hen or in an incubator one

day any one with experience can tell to a certainty if it will hatch unless it be a very dark colored egg, when it is often impossible to tell at so early a date. Take a white egg that has been incubated for one day and if it is fertile a test will show a reddish spot in the center and the blood veins can be seen radiating from the central spot. Gradually the contents become darker until the whole egg seems dark except the air bubble, which slowly grows larger until at last it occupies one-third the space in the shell. After a little experience the operator can determine quite exactly what eggs will hatch and what ones will not.

A tester may be made by making a cone of thick paper large enough at the largest end to admit an egg sidewise and leaving an eye hole at the other. With one hand hold the egg in the larger end so no light can come between it and the tester and look through the smaller end toward a strong light from a window or at a lamp in a darkened room.

Eggs for Hatching Purposes should receive the best care possible. The eggs should promptly be gathered every day, and if the weather is cold they should be cared for about as often as they are laid. Fresh eggs just laid will give a better hatch than if older. While we may get a fair hatch from eggs a week or two old yet it is not the rule. It is bad policy for those who ship eggs for hatching purposes to send out anything but fresh eggs, for eggs two or three weeks old do not bear shipping as well as fresh ones, and in most cases do not hatch well. Eggs for shipping long distances should be fresh, and if this rule were followed strictly we would have much better hatches.

When shipped for hatching they should not be at once put under the hen or in the incubator, but should remain at least twelve hours to become settled into natural position after being taken up in transit.

The eggs should be kept in a temperature of from fifty to sixty degrees, and if turned every day will remain much longer in a perfect state for hatching. The eggs should not be packed in any material that will not freely allow the air to get at them. Every one should have an egg case in which to keep the eggs for hatching, and those having a turning device find it is exceedingly convenient.

The Hen and Her Brood.—Whether it is best to use the hen or the incubator in the hatching of the eggs is a question largely determined by natural and financial conditions; but since the hen was "first upon

the ground" we give a few general directions as to the care of the mother and her brood, offered by P. W. Hearn, of Indiana:

"After hatching leave the chicks undisturbed in the nest twenty-four hours at least. Their first feed should be bread baked in the oven until it will crumble. Cut it in small slices, as it will crumble sooner. Put this in a pan and mash it with the potato masher until it is quite fine. Then make it moist, not sloppy, with milk. A hard boiled egg and an onion chopped fine and mixed with the bread now and then gives them a better appetite. If they need more exercise throw them a few scraps of meat small enough so that they can carry them around. This will not only furnish exercise for the chicks but amusement for the feeder."

After being kept on this food for a week granulated oatmeal or small particles of cracked corn may be added. At the end of two weeks, and not before, whole meat may be fed along with the other food.

If a chick gets stunted during the first five weeks of its existence it will never make a good market fowl. They should be pushed on at all times, but require particular attention during the time mentioned. Young stock requires frequent but light feeding.

Chicks as well as old hens should always have a supply of grit. The grit should be sharp, as round stones will not grind.

The hen and brood should be placed in a dry coop on the grass, where the young chicks can get at the grass whenever the weather permits. If kept indoors the chicks must be kept on earth or on boards covered with earth. Experience has taught that if not so kept disaster will follow.

The Incubator.—The use of incubators dates back about a dozen years, and the apparatus is naturally not yet perfect. Those who operate them are also liable to make mistakes, one of the most common, according to a writer in the *Farmer's Voice*, being that of keeping the incubator at too high a temperature and not giving the eggs a chance to cool. The same authority also remarks:

"Never have we seen a set of directions for running an incubator that said a word about keeping the small end of the egg the lowest, and yet this is an important point. If the eggs are allowed to lie with the point the highest the chick is very often found to be malformed, and as often fails to get out of the shell at all. During the early part

of the period of incubation the embryo chick lies at the highest side of the shell. Turn the egg and immediately the chick shifts its position and rises to the top. If the smallest end of the egg is lowest the chick's head is next the air bubble in the large end of the egg and in its natural position. If the small end is the highest the head of the chick gets in the small end of the shell away from the air bubble, and when it has grown so large that it does not turn as the eggs are turned it grows into the wrong shape and often dies in the shell, or if it gets out is not well formed. In turning the eggs in incubators always place the small ends the lowest by hand after the eggs are turned. This allows them to cool down and fresh air gets into the bubble and the chick gets a fresh supply of oxygen to support it for the next twenty-four hours."

P. H. Hearn, the Indiana poultry man, has laid down general rules for testing an incubator, which are offered as the best we have seen:

An incubator that requires attention oftener than twice a day is of little value.

A good incubator is never cooled and heated by the opening of a valve that allows a draft to pass through the egg chamber. It should have thick walls, so that the outside temperature will not affect the inside temperature.

If a hot air machine, the walls ought to be from four to six inches thick, and made of a good non-conductor of heat. If a hot water machine, they need not be more than two-thirds as thick, but likewise should be of a double wall, filled with a good non-conductor of heat.

The regulator should be simple but accurate—no electric regulators, or any kind of clock work.

It is not desirable to have a single door with glass in it, for the glass is a good conductor of heat. If a glass door is used an outer heavy door should always accompany it.

You will find two classes of machines—one that heats with hot air, while the other heats with hot water. Each has its advantages over the other. A hot water incubator if not watched may begin to leak in the middle of a hatch and spoil the hatch, but it has the power to hold heat for a long time if the lamps should happen to go out. The hot air machine soon cools unless it has very good non-conducting

walls when the lamps go out, but is heated in a few minutes. As far as hatching is concerned the heat from either is just alike and will hatch the same.

Look at the record of the machine and see what it has done. If a machine cannot obtain a few awards, at least, it should not be bought. Do not be mislead by glowing testimonials, but write to six or seven of those who claim to have used it and have them send a record of the results of their own operations.

A beginner has no need of a larger machine than one that holds two hundred eggs; one hundred and fifty-egg size would be better.

The Brooder.—When removing the chicks from the incubator to the brooder throw a flannel cloth over them, as they are very sensitive when first out of the shell.

About every one who ever used a brooder agrees that they are of more value than an incubator in the poultry yard. We can get along without an incubator, for it is not very much trouble to get chickens hatched by hens, but the man who undertakes to take care of the number of clucking hens that it is necessary to have to rear two hundred chickens will have his hands pretty full.

The two essential things for a brooder house are warmth and light, and these can be secured by anyone who tries to get them. A cheap brooder is thus described: The house is six feet wide and fourteen feet long and faces the south. On the south side a row of windows extends the entire length of the building, so as to catch the sun from morning to evening. These windows swing in on hinges when it is desirable to open them, and by opening one at each end the air can be purified in a few minutes without creating a draught that will strike the chickens. The building is made of cheap flooring, ceiled inside with the same, and under both ceiling and weather boarding is a coat of tar paper. Practically it is an air tight box, and is warm and comfortable without artificial heat, except from the brooder lamp, almost every day in the year. The brooder extends along the north side, and in it the chicks keep perfectly comfortable no matter how cold the weather may be. They can run out and eat, and as soon as they feel the least chilly they run back under their cover. The whole cost of this house is under \$30, and it will hold three hundred chickens until old enough to take out of the brooder.

Chicks and Their Care.—Do not be in haste to feed your little chicks after they have been hatched, but let them remain under the mother hen until the second day thereafter. You greatly injure little chicks by removing them from under the hen and away from their nest too soon. It would be better to allow them to remain in the nest without food for forty-eight hours if the mother hen is content to set on them that length of time. Chicks thus treated will come off the nest vigorous and strong and will relish their first feed.

Perhaps there are more little chicks injured by kindness than anything else, especially if you are hatching some fine thoroughbreds in which you are taking special interest. Bowel trouble after the chicks are a day or two old is the cause of the greatest loss, and this is brought on principally by overfeeding. We read a great deal about overfeeding laying fowls, but we do not hear enough said about overfeeding little chicks, which is as great an evil.

Let the little chicks get hungry and cry for food and you will have chicks that will grow and be healthy. Do not feed so much that they cannot eat it all up clean in a short time.

Do not forget grit from the start. Perhaps the first thing to do is to procure some clean sand, sprinkle it in the bottom of the box you put them in, then scatter your feed on this sand and the little chicks will get it. The poultry supply houses have chick grit for sale. Egg shells make a pretty fair substitute for it if it is not readily obtained. Place the shells in the oven of the kitchen stove and subject them to a slow heat until they are thoroughly dried. They will then be quite brittle and can be crushed into small particles. Place some of this near the coop where the chicks can get at it every day. It will save the lives of many youngsters which would otherwise fall victims to stomach and bowel troubles.

Hard boiled eggs are considered by many poultry raisers the best substance to feed chicks the first week after they are hatched. The infertile eggs which are tested out on the eighth day are reserved for feeding in this manner. An infertile egg will not undergo any change within the eight days that would make it unfit food for the chicks. The eggs should be boiled at least half an hour and the chicks should be given what they will eat of it once a day. After ten days they may be given cracked corn and wheat and the eggs discontinued.

MEAT AND FEATHERS

In the preparation of poultry for the market fowls should be left without food for twelve hours before being killed, so that the crop may be empty.

Then suspend each one by the feet, and with a sharp-pointed knife cut a deep gash in the roof of the mouth at the base of the brain. Plucking should begin at once, all the large feathers being removed by the time the fowl is dead.

The pin feathers can then be easily removed. Do not remove crop or intestines. Carefully wash the mouth and remove all blood clots. Do not singe, and by all means do not tear the skin. Let them hang in a cool place until the animal heat is out, then pack in layers in box or barrel if intended for shipment.

If a great number are to be dressed the feathers should be saved, as they will bring from five cents to seven cents a pound when dry picked. Chicken feathers are growing in demand, especially the dry-picked.

Cost of Producing Chicken Meat.—It costs about five cents a pound to make a chicken weigh five pounds. At that time there is about the same weight of bones, feathers and entrails to be found as in a fowl weighing ten pounds. Such a fowl is not a cheap one to buy, nor a profitable one to sell. The same fowl fed to its utmost will weigh, say eight pounds, the increase being almost altogether meat.

Some figures worked out at the Ottawa, Canada, Experiment farm will be of interest: Ninety ordinary chickens were bought in the market. Three of these were killed and weighed with the feathers off eight and one-half pounds. After being dressed for cooking they weighed five pounds and two ounces, after being cooked and cooled two days they weighed three and one-half pounds.

After being fattened thirty-six days three other fowls of the same flock were killed, and these weighed with the feathers off sixteen and one-fourth pounds. When ready to cook they weighed eleven pounds and six ounces, and after two days' cooling nine pounds and two ounces.

After deducting for the bones there was left seven pounds and six ounces of meat as against two pounds and six ounces of bone-free meat in those first killed. They had grown five pounds of meat to

eleven ounces of bone while being fattened. They were worth six cents a pound when first bought, and were worth ten cents a pound at the end of the experiment. In this case to add five pounds of meat had cost thirteen cents for feed.

Fattening Cockerels.—In the raising of poultry for meat there are few branches of the industry more profitable if properly conducted than the caponizing and fattening of cockerels. September is about the time when the cockerels of the last spring's hatch are ready for caponizing, and if they are operated on they will bring about five times as much the next spring as if sold in their first fall and pay for the feed they eat besides. The flesh of the capon is always as sweet and tender as that of a well-fattened spring chicken, as it never takes enough exercise to harden its muscles.

To caponize a cockerel is not a serious matter. The tools cost \$2.50, and it is an easy matter to learn how to use them. The directions that go with the tools are so plain that any one can understand them, and after a little practice do as well as the most expert. It is best to practice on a freshly killed chicken before beginning on a living one. If in the operation a mistake is made and the bird operated on dies no harm is done, as it simply bleeds to death the same as it would if its head were cut off, and is just as good for the table as it would have been if killed in the regulation way. When a mistake is made the bird dies in a few minutes from the loss of blood and should be dressed for use at once. Capons are coming into favor in the west, while for a good many years the Philadelphia capon has had a national reputation.

DISEASES AND PESTS

Like all other domestic animals chickens are subject to many diseases similar to those which afflict man. Some of them are caused by unhealthy food or exposure and others by the presence of living pests, which lodge in different parts of the body. The most important of these are mentioned below with their remedies.

We are apt to be a little careless rather than double our efforts in the care of poultry in midsummer. The most critical time with both old and young poultry begins about the first of June and continues up to the month of September or until all have moulted. They contract more diseases during this period than in all the rest of the year put

together. It is then that cholera makes its appearance, and then that roup gets its start.

Roup.—Wet, dirty, little coops that little chicks are kept in over night are conducive to roup, and when once it gets a hold on growing chicks it stays with them, and becoming well established in the flock is like whooping cough in children—stays until warm weather comes in again in the spring. During the winter is when it gets in its worst effects, changing to different forms, all of which are fatal. When once it gets hold on a flock it is almost impossible to check it without complete extermination, so the thing to do is to not let it get a start. If your old birds have had this trouble keep them entirely separate from your young growing chicks from the time they are hatched. Better after the breeding season sell the last old bird off if you cannot keep them apart from the growing chicks.

Roup Remedies.—One part perchloride iron to three parts pure glycerine, mixed. Administer thus: Take a small brush, and dipping in above mixture swab the mouth of the sick bird from two to three times daily until cured, giving dose of rhubarb or castor oil every other day while using. Wash off nostrils and under wings with a solution of carbolic acid, as there is no use in trying to cure a bird when some of the poison is left sticking to him. Isolate from other fowls.

Glycerite of tannin is also used and is made by dissolving a troy ounce of tannic acid in four fluid ounces of glycerine by gently heating. For roup anoint the head and inside of the mouth with glycerite.

Chicken Cholera invariably kills inside of forty-eight hours. Fowls suffering with a severe attack of diarrhea are too often supposed to have cholera. This mistake is especially likely to be made if a number in the same yard are affected in the same way at the same time. Such trouble is often nothing more than indigestion, and while alarming in its aspects is something altogether distinct from cholera. It is brought on by improper food, or food of one kind to which the flock has been too long restricted. A complete change in the plan of feeding will often cause the trouble to entirely disappear inside of a week. Chicken cholera proper is an uncommon disease. Not one-half the cases which are so reported are in reality that dreaded scourge.

In treating it the poultry house should first be thoroughly cleansed, the rubbish from nest and floor burned, and a whitewash applied of freshly burned lime with about a dessertspoonful of crude carbolic acid to each pailful. This should be done while the whitewash is still hot, so as to utilize the germicidal quality of fresh lime. The roosts, yard and every available spot should be disinfected with a spray of carbolic acid and water at the rate of about a tablespoonful to the pailful. Fresh dust with carbolic acid should then be put in the scratching boxes and the drinking water carbolized, about a teaspoonful to the gallon.

So much for disinfection; now for the remedies: A teaspoonful of asafetida and a dessertspoonful of epsom salts are thoroughly mixed with the soft food—enough for a flock of twenty-five. The birds that do not want to eat are dosed with salts and asafetida and placed in the sunlight. At intervals of about a week two other disinfectants are given.

Gapes are caused by a little worm that finds lodgment in the windpipe of the young fowls. The origin of the gape worm is not fully decided upon, but it is known that it comes out of the ground and is picked up by the young fowls, and immediately takes up its residence where it can do the most damage. When gapes once appear on a farm they are likely to be found there year after year, and of two farms lying side by side gape worm may be plentiful on one and unknown on the other.

The best remedy is prevention. The young fowls pick these worms off the grass in the early morning. As soon as the dew dries off the worms crawl down into the soil and stay there until the sun is down. If young fowls are kept shut up until the grass is dry they will not be troubled with the gapes. Young fowls reared in a brooder never suffer from gapes, because they do not run in the wet grass early in the morning.

When the fowl is suffering from the attacks of the worm take a wing feather of a hen and strip it except a little brush at the end. Open the mouth very wide and run the feather down the windpipe and twist it around several times. This usually dislodges the worm and it is drawn out with the feather, at least into the throat, where it is swallowed and can do no more harm.

For very young chicks, whose windpipes are so small that this

treatment cannot be applied, many recommend the rubbing of the neck with vaseline or lard thoroughly mixed with a little turpentine (three parts of lard or vaseline to one of turpentine). Treatment should be given before the disease makes its appearance. Care should be taken, however, in applying the remedy. Don't get too much turpentine in. Pure turpentine will quickly dispatch a chick, which is by no means a desideratum.

The oil of sassafras has proven a fine preventive and cure for the gapes. Put a few drops in the food and drop a drop down the windpipe of those badly affected.

Lice and Mites.—Aside from the application of dust, lice may be destroyed by the absorption through the pores of the powerful odors of several kinds of mineral and vegetable oils. This is the secret of the success of various "lice killers" now on the market. They are meritorious and effect the desired purpose when properly applied.

Among the oils used for this purpose kerosene or common lamp oil is one of the very best. It also is comparatively cheap and usually at hand. It is applied to the roosting perches, which are kept soaked with it, in the nest boxes beneath the straw and in the corners of the boxes, where it cannot get on the eggs; in the bottom and insides of the brood coops and on the shanks of the hens with the chicks. It is not necessary to apply it to the little chicks. They get it sufficiently strong from the coop, the shanks and feathers of the mother hen.

Oil for this purpose is really more effective than dust, for the reason that the odor of the oil is the more penetrating. It reaches the lice where the dust often misses them. Hence the popularity of the "lice killers," show the great value of strong odors and their effectiveness in killing lice in poultry.

If mites bother the nests give the sitting hen a good dusting of insect powder a day or two before you want to set her; if they are in the nest boxes take out all the straw and put a little crude carbolic acid, dabbed about, in the box, enough to make a good strong smell. Do this the day before you want to set the hen, so that the freshest of the smell may evaporate and be gone before the warm body of the hen hovers down over it, causing it to come up through the eggs stronger than ever. Paint the roosts also, if mites are on them.

Crop-bound Hen.—Every keeper of poultry occasionally has a crop-

bound hen on his hands. Hens in this condition will invariably die if the owner does not come to their assistance and relieve them of the impaction. And this can nearly always be done successfully.

Dissolve a heaping teaspoonful of soda in a teacup of water; pour a spoonful down the bird's throat, at the same time gently manipulate the mass in the crop with the fingers. In four hours give a spoonful of sweet oil. If this does not overcome the trouble make an incision an inch long into the crop and empty out the contents. Sew up the opening, being careful to put a separate set of stitches in the inner and outer skin. The two must not be sewed together. Put the bird in a pen to itself and feed on soft food for a week. The operation will be a success in almost every instance.

Scaly Leg is something which is very apt to show itself on fowls over a year old. It can easily be prevented if taken in time, and nothing is better for the purpose than kerosene and lard. If the evidences of the disease are already visible one treatment will not be sufficient to effect a cure, but should be repeated at first once every two weeks, and then every month, until the legs are smooth and clean.

CHAPTER XVII

TURKEYS, DUCKS, GEESE, AND PIGEONS

The Feather Business—Turkeys and How to Raise Them—Ducks the Hardest of Poultry—Profit in Growing Them—Selection and Care of Breeding Birds—The Value of Geese—Squabs as “Quail on Toast.”

There are few farmers who are not to some extent poulterers, and although their chickens and eggs are the main issue in this line, the raising of turkeys, ducks, geese and pigeons often forms a profitable side issue and goes far toward supplying the women with their pin money. When Thanksgiving comes around the farmer can congratulate himself that he has given a little attention to this form of poultry raising, being able to supply his own table as well as sell to his less thoughtful or enterprising neighbors. Not a few people also much prefer a roast duck or goose to a turkey, while duck eggs are also very highly esteemed by many. The supplying of feathers to the trade is also an inducement to raise ducks and geese not to be overlooked. The raising of squabs, or young pigeons, is becoming a most profitable industry, especially in the neighborhood of large cities, where there are many extensive breeding establishments engaged in supplying the large demand for “quail on toast.”

The Feather Business.—Farmers used to throw away their feathers; now the feather business has grown to one of gigantic proportions. It is a well known fact that large numbers of poultry are imported each year, but it is not so well known that feathers are also imported. It is nevertheless true. Feathers are imported into this country from almost every civilized country in the world, different kinds coming from different countries. China leads in the cheap grades of feathers and sends more pounds than any other country, which are mostly duck feathers. There is one thing about these feathers that is not very pleasing to the importer, which is the fact that nearly two-fifths of

the stock is dirt. The better grades of feathers come from Germany, Austria and Russia, and are goose feathers. Feathers come from far-away Palestine, from the North Sea, and from Norway and Siberia.

From the northern countries we get what is known as Eider-down. This does not separate like the ordinary down, but sticks together like nettles, and a pound of it is as large as a bushel measure. It is the product of the wild Eider-duck, and in color is a brownish gray. The price ranges from \$6 to \$7.50 per pound, and the demand is always equal to the supply. It is contrary to law to kill these ducks, and the down has to be obtained in a peculiar manner. They line their nests with the down on the steep rocks and ice of the countries named, and the feathers are obtained from their nests. The nests can be robbed only twice a year, as it is said a pair of ducks can only produce enough down to line their nests three times a year. It is used for expensive quilts almost exclusively.

Domestic white duck feathers would sell for as much as goose feathers, if it were not for the fact that they have an odor that it is impossible to entirely remove. Their filling capacity is equal to goose feathers. With chicken feathers the color makes but little difference, but the black ones are the least desirable.

Special machinery is made for cleaning feathers, and the place where they are cleaned is called a "feather foundry." In this "foundry" the feathers are steamed, blown, quilled, mixed, sorted and made into pillows and beds ready for use.

Turkeys are easily raised, and there is no excuse for being without them. Where there are plenty of grasshoppers turkeys will be able in summer to take care of themselves. The only trouble raising turkeys, as practiced on the majority of farms, is in getting the eggs hatched. A turkey hen is very fastidious and particular about her nest, and it is often very difficult to find just where she lays. If the nest is found and the eggs taken and set under a chicken hen the little poults hatched will have a pretty tough time of it. They will have to be given constant attention in order to grow them, whereas if the turkey hen has charge of a brood they are quite well cared for and protected, and other than the protection from the dew of early morn into which their imprudent mothers lead them, they will need no watching.

If there are no turkeys on the farm, about the cheapest way to get a start is in the spring to buy three or four sittings of eggs from a reliable breeder, of the variety desired, Mammoth Bronze preferably. You will have to depend upon the chicken hen to incubate them, and upon yourself to raise them. The next year the sailing will be easy, and in two or three years you should have turkeys to sell, eat and even give away.

"If I were to select an ideal place for raising turkeys," says a recent writer, "I should choose a rocky, hilly place, with plenty of running water and grass, bounded by unlimited range, a place free from coyotes, foxes, minks, weasels and everything else which would destroy my flock. I should let them do just as they pleased, except I should feed and pet them just enough to keep them gentle."

Bring the young turkeys home at night and shut them in one of the lath pens; then if the morning is wet or cold you can keep them up awhile. A barrel makes a good coop for them, or by cutting off the long feathers of the wings and tail of the old one you can keep them in the pen without confining in a tight coop.

When you turn them out, drive them the way you want them to run. Turkeys usually have a certain run that they go over every day if undisturbed. A little care in the start may save trouble later on. For instance, if your neighbor on the north has turkeys of the same color as yours, get yours trained, if possible, to running in the opposite direction. It is easy to mark them. Tie a cloth string around the wing next to the body, and let the loose ends hang down under the wing next to the body. This would not be noticed unless one knew it was there, and would settle the ownership when two or more claimed the same turkey.

Lice are particularly fond of young turkeys, and they must be watched or they will kill off the flock before their presence is suspected. It is not a good plan to grease young turkeys. They are so sensitive to cold that they should be kept free from grease, which plasters their down close to the flesh and prevents it from keeping them warm. Use fresh Persian insect powder to dust over them and over the hen to kill lice. Do not feed for thirty hours after they come from the shell, and then give them eggs that have been boiled half an hour or more mixed with dry bread made of wheat or corn. Then for a day or so give them corn-bread in which eggs form an

ingredient, after which the eggs may be dropped, except for occasional variety in the diet of cottage cheese, boiled potatoes mixed with corn or wheat bread and seasoned with cayenne pepper until it is pretty hot, onion tops, lettuce, and meat boiled to shreds and mixed with potatoes and corn-meal. Make all mixed feeds very dry, so as to prevent a pasty condition, and on no account forget the grit. Anything white attracts a young turkey, so that a good grit is made by pounding up broken dishes until the pieces are the size of wheat grains, or even smaller. The birds pick this up when they would not look at gravel.

Again keep your young turks in a warm place at night and in a sheltered place during the day, and as they grow older enlarge their liberties and feed wheat middlings, or ground oats scalded with boiling water. Do not overfeed, but supply them with plenty of fresh water.

They must be fed often while young, but when they get feathered, once or twice a day will be sufficient if they have a good feeding range. If they get the gapes, treat them as you would the small chickens, and rub their heads with sweet oil if they have head lice. Turkeys raised with hens about the house need more food. They do not get as many grasshoppers and bugs and are more liable to gapes and lice.

Ducks.—It is claimed by many raisers of poultry that ducks are not only the most profitable but the easiest to raise, because of their remarkable vigor as compared with turkeys and chickens. This remarkable vigor and comparative freedom from fatal diseases constitutes the chief explanation of the profit to the poulterer. Although they are voracious eaters it has been proven that they do not eat as much to gain a given number of pounds as either chickens or turkeys. They usually also bring a higher price in the market. Proper care, however, is required in the successful raising of ducks as of other fowls; even a gold mine has to be developed carefully.

Water and Food.—The secret of successful duck rearing consists in providing the young ducklings with plenty of water to drink and a liberal supply of animal food in their diet.

First as to water: Provide water fountains which are easily cleaned and into which the ducklings can thrust their heads, but not their bodies. Though an aquatic bird their first down is not dense

enough to protect them from water, and water exercises a deadly influence on them, causing cramps. The fountains should be filled twice daily, and if clogged with dirt should be cleansed at every feeding time.

Second as to the food: They should be fed at least three times daily, and all that they will eat at each feeding, with nothing left over to get sour. If too much is given at a feeding the surplus should be removed. Troughs should be provided to hold the food. These are easily made of a V-shape by nailing two narrow boards together and providing pieces at the ends for ends and supports. The food should be mixed daily and fed in a moist state.

The following mixture will be found to answer the requirements of the young birds, and for that matter of the adults also: Take equal parts by measure of corn-meal and middlings and half to two-thirds the quantity of corn-meal or ground beef scraps; add to this a liberal quantity of fine grit and mix the whole thoroughly with cold water in warm weather. In cold weather warm or hot water can be used, but the mixture should be allowed to cool before feeding. It should never be fed hot. While for chickens the dough should be in a crumbly state, for ducks it should be quite wet.

The ducklings will do better when confined than when allowed to roam. If large numbers are reared together there is some danger to be apprehended from crowding, which may cause suffocation of some of the young, and will certainly prevent some from perfect development.

Some raisers of ducks, especially beginners, err by feeding whole grain or cracked corn; others fail to supply grit or animal food, and still others crowd the ducklings too much, or fail to provide any shade; more feed whole or cracked grain. Have all the food ground fine, at least until the birds are well grown. Even old ducks will do better on ground than on whole grain.

If one observes the method above indicated and still fails of success he will do well to change his stock, for it will be fair to infer that it is not vigorous and healthy. It is possible that some of the losses in duck rearing are due to the use of unhealthy breeding stock, for in no other way does the loss seem explicable.

In selecting birds for breeding a practical poultry man advocates especially the Pekin duck. He chooses those that weigh from six to

seven pounds, and mates with them medium-sized ducks, placing one drake in a pen with about six females. The mating commences about the first of November, previous to which time the breeding ducks are fed about a third clover and sometimes plain hay, and the rest bran and meal. The idea is to fill them up with something bulky and when they begin to lay they are given five per cent. of beef scraps. In a week or so this proportion is increased to ten or twelve per cent. Water is kept before them all the time, and at a season of the year when it is possible they have it for swimming.

It is best that the ducks should not lay before some time in February. After starting to hatch with hens and machines you will probably find that you average more with hens than machines, but if you average in either case fifty per cent. you will be doing well, and even forty per cent. will be doing fairly well. From the forty per cent. you will naturally expect to raise eighty-five to ninety per cent. of ducklings, and that is all that you can expect, and seventy-five per cent. will often cover those raised by experts.

We feed the old breeding ducks before we begin to force them for eggs.

Geese.—The breeding of this noisy fowl has greatly decreased. Somehow or other there is an almost universal disapproval of the goose among farmers' wives, who usually manage that branch of the business, and they are not nearly so enthusiastic in outstripping their neighbors in the number of goslings. There are several reasons for the diminution of geese and their decreased breeding on the farms. First, they are a very unclean, filthy, noisy and meddlesome fowl, contaminating stock water if given access to it, scattering their feathers about the premises, depositing excrement wherever they most do congregate, and that is usually around the kitchen door, or at all events in the yard, and as a table fowl they are not very popular, being excelled by the turkey, chicken and even the duck.

But the goose has a place on the farm. It has a value and may be grown with profit as many could testify. Feathers will bring from thirty to forty cents per pound, and geese on foot will bring from five to seven cents per pound, or from sixty cents to \$1 each. A fatted goose will range in weight from ten to fifteen pounds, twelve pounds being about the average. If geese can be raised about the barn or a considerable distance from the house, in a special pasture arranged

for them, having water, forage and a house for winter occupancy, we believe it will pay to raise them, though there is more money in chickens.

The chicken has three distinct values, founded upon its eggs, flesh and feathers, while the goose possesses only the last two, feathers being perhaps its most profitable product. Geese, however, have no more business near the house and in the yard than have swine or cows.

Squabs and Their Breeding.—One of the best ways to amuse, instruct and delight a boy on a farm is to give him an opportunity to breed pigeons in the right way. It does not require a very great amount of capital to start the business. An old out-building which is tight enough to keep the birds from getting out is good enough to start with. A building ten feet square will hold ten pairs of pigeons at a pinch if they are given a covered yard ten by twenty feet for outside exercise.

It does not require any special skill to breed pigeons. The common pigeon is as good as any, and a dozen pairs can be bought for \$2 or \$3. They should be provided with plenty of water to drink and wash in, and should be fed cracked corn, wheat, oats and other grains. When a pair of pigeons mate it is for life, and no matter how many pairs may be in the same room they never change mates. Each pair should be provided with a double nest, each compartment about a foot square and two or three inches deep. Give them gravel and other grit, and keep the house whitewashed to keep them free from lice. If they are given tobacco stems from a cigar factory for nest material the lice will not bother them.

When they begin to breed they will produce a pair of squabs every month for eight, nine or ten months in the year, the female laying two eggs and sitting regularly, while the male feeds the growing squabs.

Squabs weigh about six pounds to the dozen and usually sell for fifty cents a pound in the city markets. Forty cents a pound is a low price and the demand is very large, for when one calls for quail on toast in a city restaurant he usually gets a squab instead of a quail. The squabs are killed just at the time they are ready to leave the nest, being larger and heavier at that time than at any other in their lives. A pair of pigeons well taken care of will produce about \$2 worth of squabs in a year, as sometimes they hatch but one of the two eggs laid at a sitting.

CHAPTER XVIII

HORSES

Proper Horses for the Farm—Hints on Food, Feeding, and General Care—Water and Watering—Keep the Horse Warm—The Horse Blanket—Care of Hair and Hoofs—Abuse of the Currycomb—The Brood Mare and Colt—Period of Gestation—The Colt's First Year—The Fall Foal—Educating the Colt—Doctoring the Horse for Worms, Lumbago, Elephant Leg, Warts, Bots, Blind Staggers, Mange, Founder, Heaves, etc., etc.—How to Drive Away Flies—Mules and How to Fatten Them.

The great question of all questions to-day for the American farmer is how to save the fertility of his land. Without stock to consume the products of a farm there is a constant waste, and this means a cash loss. Keep the stock and save the farm from becoming barren.

When you decide to begin stock raising decide what line you are going to follow and stick to it. The man who keeps sheep this year, cattle the next, and then changes to hogs or dairying will never make a success. Choose some course and stick to it through thick and thin and success is certain.

It takes many things to make up the horse that brings the highest price, and this is the one truth that too many farmers do not understand fully.

The breeding of fine horses, which was largely neglected for a number of years, has again received a wonderful impetus. Farmers have commenced to realize that the world of commerce cannot be moved without good horses, and the increasing domestic consumption and foreign demand must advance the prices of horses suitable for the markets. Many communities are commencing to take active interest in the subject, and in many instances local organizations are formed for the purpose of purchasing prime breeding animals. This is a movement in the right direction, as the day for scrub stock is past.

Farm Horses.—The farmer who undertakes to carry on the opera-

tions of his farm even with a "plug" team is practicing false economy. The farm team is the most important part of the equipment of the farm, and if it is not equal to every emergency it is not one that can be used with the greatest profit. The farmer who has a poor team wastes a great deal of time, if he is humane, by giving the team its time and making its work as light as possible. If he is not a humane man he is guilty of cruelty to animals by compelling a weak team to do work that should be done by a good one.

The farm team should be a heavy one. If the work in hand is heavy the team is equal to the occasion, and if it is light the team will do a big day's work with ease and will not eat as much feed as would a poor team kept thin by constant overworking.

In feeding a horse it should be remembered that the stomach of the animal is small, and that it is fitted to consume such concentrated feeds as grain in larger quantities proportionate to its weight than almost any other animal. A good many farmers think to economize by feeding plentifully of hay and saving the grain.

The wise farmer feeds liberally of oats and gives a little good hay. The team is not given more than a handful of hay at noon, and in the evening about ten pounds of hay is put in the manger for each 1,000 pounds the horse weighs. This amount need not be strictly regulated, but the amount stated is approximately correct. Good grooming is strictly insisted on, and the horses are carefully groomed in the evening before they are left for the night. The stables are cleaned and swept morning and evening, and a thick bed of straw is laid for the horses every night. The harness is made to fit them, and they are taught to expect good treatment. As a result they are always ready for hard work, and light work does not worry them.

All hard-worked horses in farm fields are greatly refreshed by an occasional rub with a coarse cloth or a wisp of fine dry hay. Repeated several times during a hot day this simple attention will do wonders for the toiling, sweating animal.

Other Hints on Food and Feeding.—As has been stated, the first thing to be kept in mind is never to stuff a horse with hay alone from a mistaken idea of economy. He needs grain and other concentrated food as well as hay; otherwise his naturally small stomach will become distended and he himself will grow to be fat, awkward and inferior.

The hungry horse will "hog down" his feed in an injurious way. Don't let him do it. Give him a little, enough for a mouthful, and let him dispose of that before he gets the next mouthful.

Watering the horse some minutes before feeding him will be a good practice, especially if he is a colicky animal. Heavy drinking after hearty eating is bad for a horse disposed to colic.

In feeding the horse scatter the grain over a large surfaced feed-box. He will then take less into his mouth at once, and will, therefore, chew it more thoroughly, salivate it more perfectly, and digest it more easily.

Iron mangers for grain are preferable to others as they are easily kept sweet and clean.

Overhead hay racks cause much trouble with the eyes of horses. It is better to place the horse's feed low, so that he will have to bend his head to reach it. This is good in several ways. It is the natural feeding posture of the horse. With his head bent down he will have a freer flow of saliva in his mouth to wet his food. In this position he runs no risk of getting seeds, or awns, or hulls, or dust in his eyes.

Salt is one of the necessities of animal existence. To feed it to horses put a piece in the feed-box where they can get it at any time. This does not interfere with feeding the horses and at the same time a little of the salt gets on all the grain given them.

Water and Watering.—A member of the Royal College of Veterinary Surgeons tells us in the *Mark Lane Express* of some things about water for horses that are of interest to horse owners everywhere. He says that it is absolutely necessary that the water given horses should be free from injurious substances. While it may be fit for their use in a condition that would be harmful to human beings, still it is much better to have it entirely pure than defiled in any way. Hard water is the source of kidney and bladder trouble in horses, and water that is charged with lime and magnesium salts should not be used for them. If given a choice horses exhibit a decided preference for soft water and will often choose water from a puddle rather than that from a spring or well furnishing hard water. The very best drink for them is clean, sweet rain water caught in a cistern and filtered as it runs in. Such a cistern should be kept carefully covered to exclude dust and other objectionable matter from entrance.

The quantity of water given horses is often insufficient for the nutritive and depurative purposes which it serves. Even when eating green feeds that are often as much as 90 per cent. water, horses need an additional amount, and when being fed on hay and grain containing only from 14 to 16 per cent. of water they need a great deal more. More horses have suffered from colic and indigestion from getting an insufficient quantity of water than from getting too much. A sufficient supply of pure water is necessary to the health of the horse and if frequently and regularly given the horse himself will be the best judge of the amount he needs. If water be withheld there is not only an imperfect elimination of waste and worn-out matter from the system, but the digestion of the feed is imperfect and impaction is a frequent result.

Horses should be watered before being fed instead of after. It is necessary to use some care about allowing a horse to drink too much when heated, but the water should be given a little at a time and frequently, until the thirst is entirely quenched.

Of all the many common faults in feeding horses, that of watering just after feeding grain is the worst. Water when given before eating is not retained long in the stomach, passing almost at once to the larger intestine. If the horse is not watered until after being fed it is impossible to find room in the stomach for the feed and the amount of water the horse will drink to quench his thirst. As a consequence the water passes into the intestines and carries with it a portion of the undigested feed, where besides being lost to nutrition it becomes an irritant and forerunner of disease.

But the best watering and feeding will be nullified by want of care otherwise. The horse that is well cared for in other ways will do with less nutriment than the horse that is exposed to the wet and cold and is left to his own devices.

Keep the Horse Warm.—It is a good plan if your tie stalls are not quite warm enough, or are exposed to the in-rush of cold air when the outer doors are opened, to hang curtains at the back of the stalls from rods placed near the ceiling. These curtains can be made of old blankets, pieces of carpeting, or old meal sacks sewed together. They should be fastened to rings on the rods so they can be pushed back and forth as occasion demands.

The blanket should be a part of the horse's outfit the year

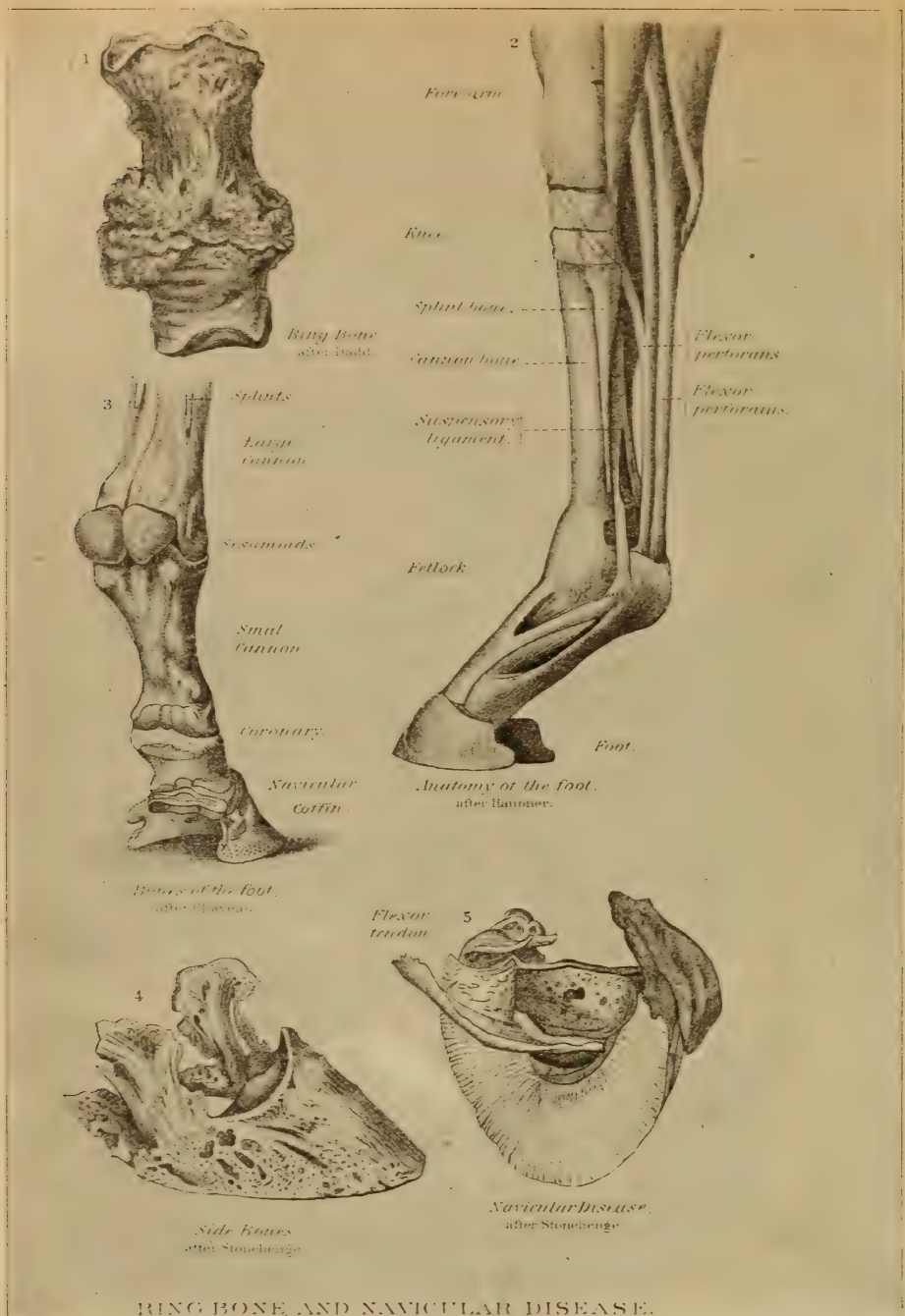


SKELETON OF HORSE.

From Special Report on Diseases of the Horse—United States Department of Agriculture

SKELETON OF HORSE.

A comparison of the skeleton of a horse with that of a cow proves at once that the former was built for speed as well as strength. An especial difference is noted in the bones of the shoulder, upon which so much strain comes. They are not only rounder and more powerful, but set at such an angle as to modify the jar to the brain while the horse is in motion. The key accompanying the picture is self-explanatory.



From Special Report on Diseases of the Horse—United States Department of Agriculture

RINGBONE AND NAVICULAR DISEASE.

The above plate shows the ligaments and bones of the horse's leg and foot, which are the seats of these diseases, as well as the abnormal appearances. Ringbone is usually caused by injuries to the ankle from blows or overwork, bringing about a bony tumor. Navicular disease is caused by a strain of the knee, producing an inflammation of the sheath, often complicated by caries of the navicular bone.

round. In warm weather a light blanket thrown over a sweating horse will prevent him from being chilled injuriously. In cool weather the blanket should be thrown over the horse when he is compelled to stand outdoors for any length of time. In cold weather the blanket is an absolute necessity to the horse that is confined. Even the warmest barns are liable to be cold enough, during the zero snaps at least, to keep the horses in a shiver. The blanket will save food in the winter.

Care of Hair and Hoofs.—A good index to the health of horses is the condition of their hair. The hair of an animal that is out of condition becomes rough and lusterless and is a sure indication that something is wrong. Keeping the hair and skin clean by regular and thorough grooming is a great help in maintaining good health. If the hair and skin of an animal are kept clean, a much better opportunity is afforded the system to throw off effete matter that would otherwise remain in the system and prove more or less detrimental to health. Good grooming makes the hair bright, smooth and glossy, a good indication of a healthy state of the system.

A handful of ground oil-cake, night and morning, mixed in the food, will make their skins healthy and improve their coats.

A horseman writes as follows regarding the careless use of the currycomb: "I pride myself on the care I give my horses, and I say keep the currycomb off them if you desire a fine, glossy coat. The currycomb irritates the skin, creates more dandruff than it cleans out, splits and cuts the hair, and makes the coat rough and dull looking. The currycomb is of no use to me except to clean the brush. Brush your horse well, give him a good rubbing with a cloth and you will secure a nice, glossy coat. The scales, if left to loosen by natural processes, will flake off in due time, and only brushing is needed to remove them and to spread through the hair the natural oil secretion of the skin."

Every farmer must have noticed that horses grown in dry countries have small, upright feet, and those grown on wet, low lands, have flat, weak-heeled ones, as a rule. Ponies grown for generations on steep hillsides and rocky heights develop a strong, high foot, with a small ground surface, but with almost flinty hardness. What connection has this with horse management on the farm? What is the hoof, anyway?

Hoofs of all animals are made of practically the same material as the skin of the horse, the horn of the cow and the nail of the man. The layers are closer packed in the hoof than in the skin, while the horn and nails are made of the same material but of less thickness than the hoof. If you soak the horns, nails and hoofs in strong soda water, the scales will separate, and, when placed under a microscope, furnish the proof of similarity. Hoof, whether alive or dead, will absorb about thirty per cent. of water, thus increasing both its weight and bulk. Under natural conditions the horse is provided with the required moisture, not in the shape of oil, of which it will absorb only seven per cent., but of water. If, now, you allow a horse to stand in the stable a considerable time, depending on the absorption of its own urine for the water for the hoof, you must expect the feet to become small, possibly to crack open, and the result contracted heels, wasted frog, and what is known as navicular disease. Next, the digestive system becomes impaired, the hoofs become shelly and brittle, and you have a ruined horse.

Moral: Keep your horses in the stable as little as possible, and keep them shod as short a time in the year as possible. Give them every opportunity to get their feet on the moist grass or ground, remembering the maxim, "no hoof, no horse."

THE BROOD MARE AND COLT

It is needless to tell the stock man that his final success in the raising of horses depends upon his wise care of the brood mare and colt. Safe general rules to follow are that heating and constipative foods should never be given to the brood mare, and that while she should have regular exercise it should never be carried to the point of fatigue. As to the colt, it is generally admitted that its first summer and winter determine its future condition, and that no subsequent care, however good, will compensate for poor treatment during the first year.

Periods of Gestation.—A mare served by a thoroughbred horse will go longer with foal than one served by a cold-blooded horse; and a mare goes longer with a mule colt than with a horse colt, but precisely what this difference amounts to is not yet sufficiently established. The average period of gestation in the mare is 240 days.

Recorded periods of 384 cases mentioned by Fleming in his *Veterinary Obstetrics*, gives 307 days for the shortest and 394 days for the longest period—a mean of 346 days. In twenty-five cases noted at the stud at Pin, in France, the shortest time was 323 days and the longest 367, the mean being 343 days.

Baumeister states that the periods of pure-bred Persian mares were 338 days for mare foals and 343 for horse foals; in pure-bred Arabs they were 337 and 339 days, females and male colts respectively. In Orloff mares the average period was 341½ days, and in half-bred English mares it was 339½ days.

The majority of foals are born from the 340th to the 350th day; living foals are rarely born from the 300th to the 310th day, but frequently from the 350th to the 365th day; after the latter period a live birth is rare. Two cases are known where the foals were carried several days longer than twelve months, and in each case there was a dispute as to the accuracy of the record by the owners, who wished to escape payment of the service fee, they disbelieving the possibility of so long a period. The longest period of the mare's gestation known is given by Dietrichs as 419 days.

It has been generally the case that the periods of gestation are shortened by the more favorable physical conditions prevailing in high-bred studs, where the keeping and the vigor are of the highest character.

The Colt's First Year.—During this period the feed should be such as will make bone and muscle, and it should be generous. Feed sparingly with corn, and use oats and bran, with good clover hay. Oil meal makes an excellent addition to the colt's ration. The stabling also must be good during the first winter, and a good-sized lot or field should be provided for exercise. During the first year, and all along up to maturity, the growth of the feet should have attention. Neglect of the hoofs often causes deformed feet and crooked limbs. The hoof should be properly trimmed so as to grow well-shaped feet and limbs. Before offering your horse for sale be sure to have him well shod, well groomed and fat. It is fully as important to fatten horses for market as any other stock. Fat horses always sell first and best, and command from 15 to 20 per cent. more than horses out of condition.

The Fall Foal.—A thrifty colt must have plenty of milk. The mare

can give a large quantity only when she has something with which to make it. She can't be half starved, and give her foal enough milk. She can't do it on corn fodder alone. She must be fed well if she is to raise a good colt.

The brood mare with a fall foal deserves especial attention. Short pastures, lack of grain and exposure are all hard on her and her foal. These things are among the reasons why fall colts never "do any good" for some people. See to it that the mare gets her full quota of the feed. Feed her in a lot by herself, where the other horses cannot molest her. Sweet hay, clover and timothy mixed, should be liberally fed, and let the mare loose on rye pasture.

Educating the Colt.—When the education of the colt should begin is a question that has several phases. One man will contend that we might as well try to teach a baby the multiplication table, as to teach a colt to pay attention to commands, but the cases are not the same. After a colt is three months old it is in full possession of its faculties, if such a word may be used in this connection, and is as teachable as a much older horse. The secret of success in training a colt, or, indeed, any other animal, is to try to teach only one thing at a time. Make the first lesson a thorough one and above all things do not make the colt afraid of you. Keep its confidence, and whatever the lesson is, keep at it until it is perfectly learned. The second lesson will be learned in a shorter time, and the third in still shorter. Before long the colt will begin to comprehend that you want to teach it some new trick. It will try to help you out to the best of its ability, and in the end once or twice showing will be all that is needed in any lesson.

There is a great difference in the "teachability" of colts. One will pick up all sorts of tricks, while another will never be able to get beyond the duties of a cart horse; but a good cart horse is a valuable animal and sometimes the best-trained carriage horse cannot fill its place. While it requires one sort of education to make a good riding or driving horse, it requires another to make a cart horse, but as much pains should be taken with one as the other.

The first lesson should be to train the colt to wear a halter, and it should always be secure when tied up so that it cannot get away, as this will settle a belief on its part that to be tied up is to stay until untied. A well-trained horse when tied is just as secure if tied with

a piece of packing twine, as he would be if tied with a ship's cable, because he does not know he can get away at all.

Scaring, beating or dragging a colt around hitched to a wagon or heavy load, with an old horse for a mate, is not training it at all.

DOCTORING THE HORSE

"Among the most pernicious ideas which possess the minds of many farmers," says J. H. Doble, the veteran horseman, "is the notion that almost anyone can doctor a horse; that some kind of medicine must be given to every horse upon the least symptom of disease, and even when the animal is well and thrifty that some drugs must be given now and then to keep him well. A most reprehensible folly is that of experimenting with drugs every time an animal shows some trifling ailment.

"If an animal dies under this treatment, and they often do, the owner consoles himself with the reflection that he tried everything he could hear of, and did his best to save it. If by some happy circumstance the horse overcomes both the disease and the bungling treatment, the owner pats himself on the back as a natural 'boss doctor,' and wouldn't give ten cents to boot between himself and the most skillful veterinary surgeon.

"When shall we ever learn that disease is not a malignant entity, but a morbid action which may as a rule be avoided? With rest, quiet and proper surroundings, nature will correct her own slight disorders. Above all, when an animal is well, do not drug it."

The above is good general advice, but for specific and well-defined disorders, medical attention is usually demanded, and simple remedies for doctoring the horses, without calling upon the veterinarian, are given below.

For Worms.—When horses are troubled with worms, give them a tablespoonful of sulphur and the same quantity of hardwood ashes in their feed, night and morning for a week; then skip a week and repeat. Put a little bran in the feed and dampen it, while giving the powders; at other times let them eat it dry.

Another remedy is to give a strong physic, and if that is not sufficient, give the following for three successive nights: Three drachms of calomel and one drachm of tartar emetic. Mix and divide into three powders.

Symptoms of worms are a rough, harsh coat; rubbing of the tail; hot breath, dry cough, and sometimes convulsions.

Lumbago.—Horses are sometimes subject to lumbago, which is of a rheumatic nature. Blister over the region of the kidneys with the following: powdered cantharides, two drachms; petrolatum, two ounces. Clip hair off over the kidneys, about as large as a plate, on each side of the backbone; apply blister and rub for ten minutes; wash off in thirty-six hours, and grease well. Give the following internally; salicylate of soda, two ounces; wine of colchicum, four ounces; spirits of niter, two ounces. Give one-half ounce in feed three times a day. Let the horse have plenty of exercise.

Warts are not contagious, but they are inclined to spread. They never cause death. The best remedy for them is to cut them out with a pair of sharp curved scissors, getting well down under them. Then treat them as simple wounds by washing them two or three times a day with a 3 per cent. solution of carbolic acid.

Another simple remedy: Take about four leaves of strong cured tobacco, place them in a vessel, pour about one-half gallon of water over them, place on the fire, letting it boil down to a strong juice, and apply to the wart. Always pick the wart so as to make it bleed before the application that it may strike into the fungous growth.

Elephantiasis, or Elephant Leg, is a chronic enlargement of the leg of the horse and it usually comes on from some injury or sprain, weakening the tissues and inducing swelling every time the horse stands a few hours. The disease sometimes defies all treatment.

Give the horse exercise every day to work out the swelling. On coming in, shower the leg with cold water, standing back some three or four feet so that the water will strike the leg with a little force. Continue this for five minutes, then do the limb up in a cold water bandage, middling tight. Let the bandage remain on four hours. After removing it, rub the leg well with the hands, and put on a dry bandage, middling tight, so as to give a little pressure. Leave this on until the horse goes out again. When it is removed, rub the leg well. Keep this up for two or three months.

Give a condition powder internally, night and morning, for two weeks; skip two weeks, and repeat. Feed a fair quantity of oats, and very little hay.

Here is the formula for the powder: Exiccated sulphate of iron,

powdered, three ounces and a half; nux vomica, three ounces; ginger, one ounce; powdered charcoal, one ounce; powdered nitrate of potash, two ounces; mix, and divide into twenty-eight powders.

Bots.—It is said that the worms or larvae of the bot fly cannot be entirely destroyed by any known remedy which can be given internally to the horse. They can be quieted, however, and the animal be relieved by slippery-elm tea or palota juice.

Blind Stagers.—If a horse shows signs of blind staggers, or megrims, give it doses of epsom salts, bran mash and exercise.

Glanders.—The treatment recommended for this distressing ailment is to keep the animal warm, and especially to bind a cloth about the throat. Internally give mild cathartics and assist the breaking of the swelling by poultices or ointments.

Mange or Scabies.—Wash the affected parts with a warm solution of green soap (medicinal soft soap). Separate the animal and take special care in feeding and grooming. Another treatment: First wash with castile soap, then apply the following, mixed in two quarts of buttermilk: four ounces of sulphur, four ounces of white copperas and four ounces of white hellebore root, in the form of powder.

Founder.—As this rheumatic affection is commonly caused by hard driving and drinking cold water when heated, the pain is usually most acute in the soft parts of the hoofs. One quart of linseed oil, internally taken, with bathing of the legs with hot water, often alleviates the pain. A few hours after giving the linseed oil prepare a drench of spirits of turpentine (one ounce), oil of sassafras (one ounce), powdered alum (one ounce), and warm water (one pint), giving the drench daily. Only half rations should be allowed and the food should be of an easily digestible nature.

Heaves, etc.—The exact cause of this malady is unknown; but in treating it particular attention should be given to the diet. Wild, moist prairie hay has been recommended, with a daily teaspoonful of lobelia mixed with the feed.

For such troubles as bone spavin and ring bone, a hot iron or the surgeon's knife is often the only remedy.

Finally it may be said that the horse is subject not only to diseases peculiarly his own, but virtually to all those which afflict mankind; so that to exhaust the subject here would be impossible.

HOW TO DRIVE AWAY FLIES

Owners of horses will be interested in the method successfully pursued by Doctor A. T. Peters, veterinarian at the Nebraska Experiment station, for driving away flies. He took an ordinary oil barrel and put into it a wooden spigot, using the barrel as a storage tank. Two and a half gallons of Zenoleum, with five gallons of cottonseed oil, were then placed in the barrel and enough water added to fill it. As required, the mixture thus formed was drawn from the barrel and sprayed upon the horses, or applied with a sponge or cloth as the occasion demanded. The control of the flies was not only quite perfect, but it had one marked advantage not possessed by most other mixtures for the purpose, in that the solution was not greasy and sticky, but left the coat of the animal in fine condition. The mixture has the further advantage of being a very economical one, a barrel of it being compounded at very small cost.

MULES AND HOW TO FATTEN THEM

An Illinois mule dealer fattens his stock as follows: Put them into a shed or barn that can be closed up, except the windows and doors. Hang up at all of these, burlap fastened at the top so that it will blow in and out with the wind and when quiet it will keep the place dark. Flies will not stay there. If the mules are turned loose in the barn, put in a good oak trough. If the trough is of pine, put a hoop-iron band on the edge, as mules are great to gnaw. Have a small lot adjoining, in which you can turn them at night to roll.

If they have collar sores, keep these well greased with axle grease. Flies do not like the smell, and will not light upon the sore if it is well greased. Have a half-barrel of water in one corner where the mules can go and drink at will. Put this up so high that they can only drink out of it, and not get any litter into it. Place a box of salt and ashes where the animals can at all times go and lick it. Now commence feeding them lightly, increasing until you give them all they will eat of green corn, clover hay, oats, ground or soaked corn, bran, and a little oatmeal and brown sugar. In sixty or ninety days they will be fat and fit for market, provided you have the right kind of mules to start with.

CHAPTER XIX

CATTLE

Beef Cattle and Dehorning Them—The Dehorning of Calves and Old Cattle—The Dairy Cow's Food—The Best Milk Yields—Don't Excite Your Milch Cow—To Dry Up a Cow—Training the Jersey Bull—Oats for Calving Cows—What, When and How to Feed the Calf—Teaching the Calf to Drink Milk—Cattle Diseases—Dry Scab, Clover Bloat and Eye Disease—Vaccination as a Preventive of Blackleg—Milk Fever, Garget and Scours—To Keep Flies Off the Dairy Herd.

It is with the raising of cattle as with every other kind of industry. Determine upon your special line of work, and then study your subject and stick to it if you want to make a success. We do not mean by this that you should not indulge in mixed farming—that is, the raising of live stock with the cultivation of the land; for this combination is conceded to be the most profitable. Not only are many products of the farm used in the feeding of live stock which otherwise would go to waste, but without the enrichment of the land with either manure or commercial fertilizers the soil would soon become exhausted, and it is needless to say that the use of commercial fertilizers alone would be very expensive.

It is taken for granted that the farmer will raise live stock, but if he raises it he should determine upon the kind and the special class of that kind. If he chooses cattle he should devote his attention either to beef or to dairy stock. Each requires special food and care.

Beef Cattle.—Corn is without doubt the most excellent of all grains for fattening purposes, and the farmer who is able to raise the most and the best corn can embark most profitably in the breeding of fine beef cattle. He should have both the corn and the pasturage.

But the corn-fed cow is not the milk giver. The latter demands a mixed diet of corn-meal, corn-stalks, wheat bran and oats.

Dehorn Your Beef Cattle.—One has but to travel through the sections of country from which beef cattle come to be impressed with the fact that dehorning has passed the experimental stage, and is largely practiced by those who are raising steers to be sold for others to feed. The advantages of the custom are so many and so great that the simple naming of them ought to convince the most skeptical that to dehorn is the humane and proper thing to do.

Among the advantages of dehorning may be mentioned the saving of space at feeding bunk, hay-rack, shed, water-tank or wherever cattle congregate; less danger of injury in shipping, a more uniform appearance and, most important of all, the fact that, other things being equal, horns detract ten to fifteen cents per hundred pounds from the selling price of the cattle. This is especially true where they are intended for further shipment alive; in fact some of the eastern shippers have instructions not to buy horned cattle if they can possibly fill their orders with dehorned animals of the required weight and grade. This, of course, narrows the competition, and instead of being readily picked up for eastern shipment or export, a bunch of horned steers may have to beg for a buyer for local slaughter at a much greater discount than that named compared with what they would have brought if dehorned. This, of course, does not always hold true, depending entirely upon the supply. With light receipts of cattle suitable for their purpose shippers and exporters will not always pass a drove of cattle simply because they are horned, but when the market is flooded with this sort of cattle they develop a very discriminating taste, and "can't use" stock that they would perhaps have been glad to get the day before.

It is to the interest of every man who raises or feeds cattle to dehorn them, and the younger it is done the better.

There still remain persons who shrink from the thought of inflicting pain, and for that reason oppose dehorning. Such people should watch the cattle unloaded at the stockyards, note those with eyes gouged out, horns broken and bleeding, and bodies bruised by horn-thrusts, and then go home and resolve to dehorn.

Early Dehorning.—Calves should be operated on before they get old enough to have horns. It is like killing weeds—the best time is just before they appear. Caustic potash is the agent used. This comes in little sticks and in a convenient form for use. It should not be

touched, as it will burn the skin off the hands if they come in contact with it. The way to handle it is to wrap one end in paper and then it is perfectly safe to handle.

About the time the calf is two weeks old is a good time to dehorn it. With a pair of scissors clip the hair away around the button from which the horn will grow. Then scrape the button with a knife until it looks red, but not until it bleeds. Moisten the end of the stick of caustic potash and rub the button and a ring around the base of it, taking care not to touch the skin beyond this. Give it a thorough rubbing and it will cauterize the surface and a scab will form. In a few days this will come off and the horn is killed. The potash is very cheap and easily applied, and to take the horn off at this time is a painless operation.

Another dealer dehorns his calves with concentrated lye. A thick paste is made and applied with a swab, the hair being first clipped from around the embryo horn. The cost is nominal, and there is no perceptible loss in growth.

Dehorning Old Cattle.—J. L. Taggart writes as follows in regard to the best method of dehorning: "I dehorn about fifty cattle a year, and in six years have lost but one. I consider the knife preferable to the saw, as it is more rapid, leaves a smoother wound and is less painful. The saw may be used on very large and old horns, or where the knife is difficult to place on account of inturned horns. The operation should be performed before the animal is two years old. The best time is in the fall while the stock are still on grass, and as soon after fly time as possible. The wound will heal better during mild weather, and there is less danger of it becoming filled with dirt than in the winter when the animals have to go to feed racks for feed. They also have the advantage of feeding at a distance from other cattle.

"The best time of day is the forenoon, as this gives time to inspect the cattle once or twice to see if the bleeding has stopped. For mild hemorrhage flour is usually sufficient, or burnt alum. Should neither of these do, apply tincture of chloride of iron with a soft cloth or sponge. If this fails have some one hold his finger over the cut end of the blood vessel and call a veterinarian."

Dehorning as a Saving of Space.—When it comes to putting up cows for winter the cow that has no horns will be found to take much less

room than her neighbor who is tempted to, and generally does, hook and fight all those near her. In the stable, of course, each stall will accommodate its cow, horns or no horns. But we believe that horned cattle are often kept in stables on bright, pleasant wintry days, to keep them from hooking one another, when they would be much healthier if allowed to run in a small yard. Most barnyards are made much larger than would be necessary, if all the horns were removed. This wastes manure, as more surface is exposed to rains, and the droppings in a large yard are often so scattered that they are never gathered into heaps and carried where they are needed.

The Dairy Cow's Food.—Experiments have shown that cows differ in two important matters; in the amount of food support required and in the application of the surplus of food consumed above the required food of support. The most profitable cow, from the dairyman's point of view, uses all the surplus in milk production; all the food used to build up weight not needed comes out of what would be net profit in the case of the best type of dairy cow.

H. B. Gurler, one of the best known dairymen of Illinois, in an address before an institute, recently said that he begins warming his water as soon as freezing weather sets in. For his dairy cattle he likes to have drinking water heated to a temperature of about 75 or 80 degrees Fahrenheit. Not only does it prevent chilling his cows and a consequent decrease in the flow of milk, but it results in the consumption of a much smaller amount of feed. Then, too, the cows find warm water more palatable. Let them drink as much as they want.

An experienced stock man pronounces the best ration for a dairy cow to be one-third wheat bran, one-third oats and one-third corn-meal. Give a pound of this mixture to each cow for every hundred pounds she weighs, and let her have hay and corn stalks for roughage. This will keep up her milk supply all winter. If she is with calf, feed half the quantity of the mixture and she will come through the winter in good shape.

The Best Milk Yielders.—"Many dairymen and others who milk cows for profit, believe that when a cow reaches the age of seven or eight her useful years are over, and that she should be replaced by one younger. But, other things being equal, this is a mistake," says L. J. Shenk of Elida, Ohio. "A cow that has been well cared for,

with generous rations and proper attention given her comfort through all seasons of the year, is better and will make a more profitable return at eight years old than at an earlier age; in other words, she is in her prime, will continue in this condition several years, and will not be considered an old cow until fourteen or fifteen years have passed.

"Cows with first calves—at two and three years—are generally unprofitable in their milk yield, and only the really good cows between seven and eight years old are performing their years' duties in the dairy herd, and probably consume but a little more than the younger ones. The fact is worthy of the consideration of those who are dairying for profit."

From a bulletin issued by the Kansas Experiment Station we glean these facts concerning the advantage of having calves come in the fall. Cows should be bred as soon as possible in order to have them come in at the best season for maintaining the milk flow.

The greatest yield is obtained from cows that calve in the fall, if proper care, feed and shelter are provided during the winter. The prices of butter fat and butter are higher during the winter, and with cows fresh in the fall or early winter, this higher price comes during the period of greatest yield.

A cow that calves in the early fall while on grass is in the best condition to make a high yield when fresh. Good feed and care through the winter will maintain a good yield, and when the cow is turned to pasture in the early spring a fresh flow will be started that will considerably increase the year's yield. A cow that calves in the spring has the best milk-producing feed at a time when she will do well with any good ration. As the flow begins to slacken, the quality of the feed grows poorer, and flies and heat help to cut it down still lower. In the fall, when the milk begins to drop rapidly on account of the time for calving, the cow goes from green pastures to dry feed, a change that tends to reduce the yield and dry up the flow entirely. Winter dairying avoids injury to flavor of butter from weeds in summer and fall pastures. Cows with fair surroundings can be made more comfortable in winter than in summer, and with fall calving will be dry when heat, flies and drouth are lowest. Winter dairying furnishes profitable employment for the farmer and his men at a season of the year when without it farm forces are either idle or work for low wages.

Fall and Winter Calves.—Another advantage of fall calving is that the calves can be raised at a season when there is time to give them that careful attention which is so great a factor in calf raising by hand, when losses from heat, flies, diarrhea, and sour milk can be avoided, and when at weaning time the calves can go from milk to green pasture without a check in growth.

To make the chances of the calf pretty certain, the cow should be housed in the barn or shed where the wind cannot get through the cracks, and given a thick straw bedding. She should be watched, and it is often a very good plan when a young cow is calving, to personally attend her, or hire some experienced hand to stay with her until the calf is born and safe from harm from the weather.

November and December calves have to be given extra care in order to get them through the winter in good shape, and it has been found a good plan to let them have at least half the milk produced by their mothers, while some dairymen and farmers let them have all of it, depending largely upon the amount given. A calf in good health can pretty easily make use of all the milk he can get from the cow, and with such liberal feed and proper treatment as to housing should grow rapidly and develop into a strong, vigorous animal that in the spring would demand and bring a good price as a fall feeder.

Don't Excite Your Milch Cows.—Any excitement or disturbance of the animal system always affects the milch cow. In April, 1893, The Kansas Agricultural College purchased twelve head of cows from Lincoln County, which had to be forwarded by rail for over 100 miles. Records were kept from each individual milking, and it was found that with the ride, homesickness and change of feed it took nearly two weeks for these cows to return to their normal quantity or quality of milk. Observations since then have demonstrated that any unusual excitement or disturbance always influences the milk flow. A little knowledge of the structure of the udder will show why.

The udder is composed of cavities, or milk cisterns, and milk ducts, surrounded by muscular connective and fatty tissues. At the end of these milk ducts, we find small cells which have the property of secreting the transforming nutrients from the blood into milk. These cells are most active at the time of milking, and in fact a large part of the milk is elaborated at this time. This necessitates a good supply of blood to the udder during the process of milking, for it is

impossible for these cells to manufacture milk without fresh supplies of nutrients from the blood. Any excitement that tends to contract the muscles of the udder or turn the blood to other portions of the body, will cause a decrease in the flow of blood. Beating the cow with a milk stool or speaking to her in harsh language, may cause the blood to flow, but not to the udder. Even feeding the cow while milking her is a bad practice, as it tends to divert the blood from the udder to the digestive tract. Every act of the milker and every surrounding of the cow should be such that the latter will give her whole attention to the secretion of milk at milking time.

The Kicking Cow.—It sometimes requires a great deal of patience to milk a kicking cow, but if the person is determined he can control himself under almost any circumstances. Occasionally a cow will persist in kicking, in spite of all precautions. For such, a light rope is suggested, with a hook at one end and a short chain at the other. Put it around the cow just in front of the udder; draw quite tight and hook in the chain. She can scarcely lift her feet, and it causes her no pain unless she tries to kick. Sometimes the difficulty is caused by a change of surroundings—from one farm to another—or by a change of milkers. Never change milkers if it can be avoided. With some cows it makes little difference; others will not stand at all for a strange person.

To Dry Up a Cow, reduce the feed, take away the grain, and when the milk yield drops, milk first once a day, then once in two days, and in one to two weeks the average cow will be dry, with her udder in good condition. With persistent milkers there is seldom difficulty, if alfalfa only is fed for a time. If a cow continues to give milk under this treatment, or if the udder is hard and feverish, the work of drying up must stop and the ration be changed to a light milk ration, with loosening feeds, and the cow milked regularly. Forced drying up under these conditions injures the cow. If by oversight the drying process has been neglected until within three or four weeks of calving, do not attempt it, as there is risk of injury to the health of the cow and her udder. After becoming dry the cow will need little attention before calving if she is on good pasture.

Training the Jersey Bull.—We hear very much of the uncertain temper of Jersey bulls. "No doubt this is the inevitable result of bad training—or want of training," says an exchange. "The bull has never

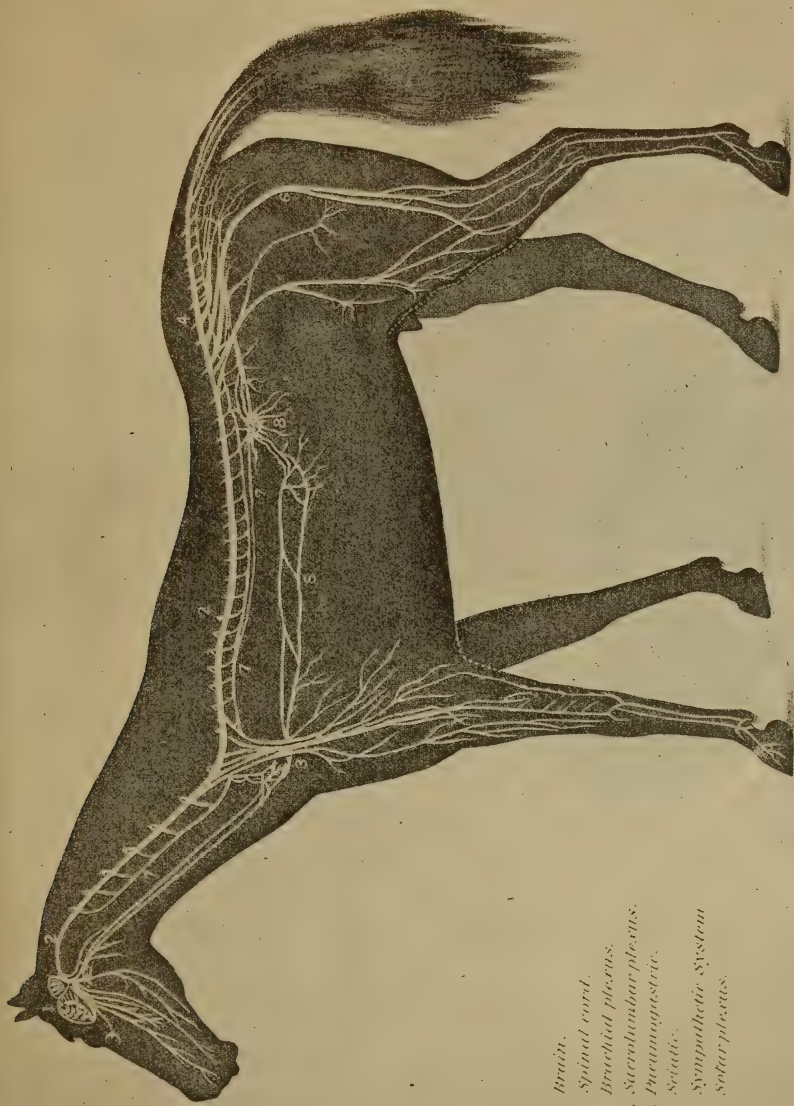
been subjected to control. He does not acquire the confidence of his keeper and feeder, and from the first the natural disposition is never checked or turned in the way it should go. By feeding by hand from the first, and afterward tethering in pasture, when the first milk feeding has continued for two or three months—and indeed if the season admits of it when it is a month old—the calf becomes used to control and submits without opposition to every wish of the keeper.

“After grown to nearly full age, the training should be continued by giving him work to do, by which subjection is fully confirmed. Idleness is the parent of vice; and to keep the young animal in this subjective state by work of some kind, if only as an exercise, will confirm its disposition and prevent the resistance to control which is the basis of a savage and unruly habit afterward. Indeed, training—by which is meant the teaching and forming of the disposition by practice and kindness, with firmness always, and at times with discipline—should be the rule with every animal on the farm.”

Oats for Calving Cows.—“Oats fed whole will cure abortion in cows,” declares A. X. Hyatt of Sheboygan Falls, Wisconsin. “When I began feeding my new ration,” he says, “my herd was in a deplorable condition. Some of them had but recently aborted, others come in heat that I supposed were with calf, and others with calf were plainly on the downward road. I had not fed oats long before a change for the better was plainly evident. My cows with calf began to throw off an astonishing amount of slime, which I believe contained abortion-producing germs; the cleansing kept right on until they regained their health and spirits, and the disease left as suddenly as it came, cows which aborted two years in succession, having borne strong calves every year since. But I keep on feeding a great many whole oats.

“Experiments conducted in the School of Physiology, Paris, France, have shown that the oat kernel contains three medicinal qualities. One acts to soothe and tone up the brain and the nerves; the second yields phosphorus to strengthen nerve tissues; the third, residing in the husk, acts as a laxative and anti-congestive on the stomach, womb, liver and bowels. Is it a wonder that oats are germ destroyers?”

Cleaning Off the Afterbirth.—“If a cow should fail to clean off the placenta or afterbirth after calving, boil a peck of oats, divide it, and



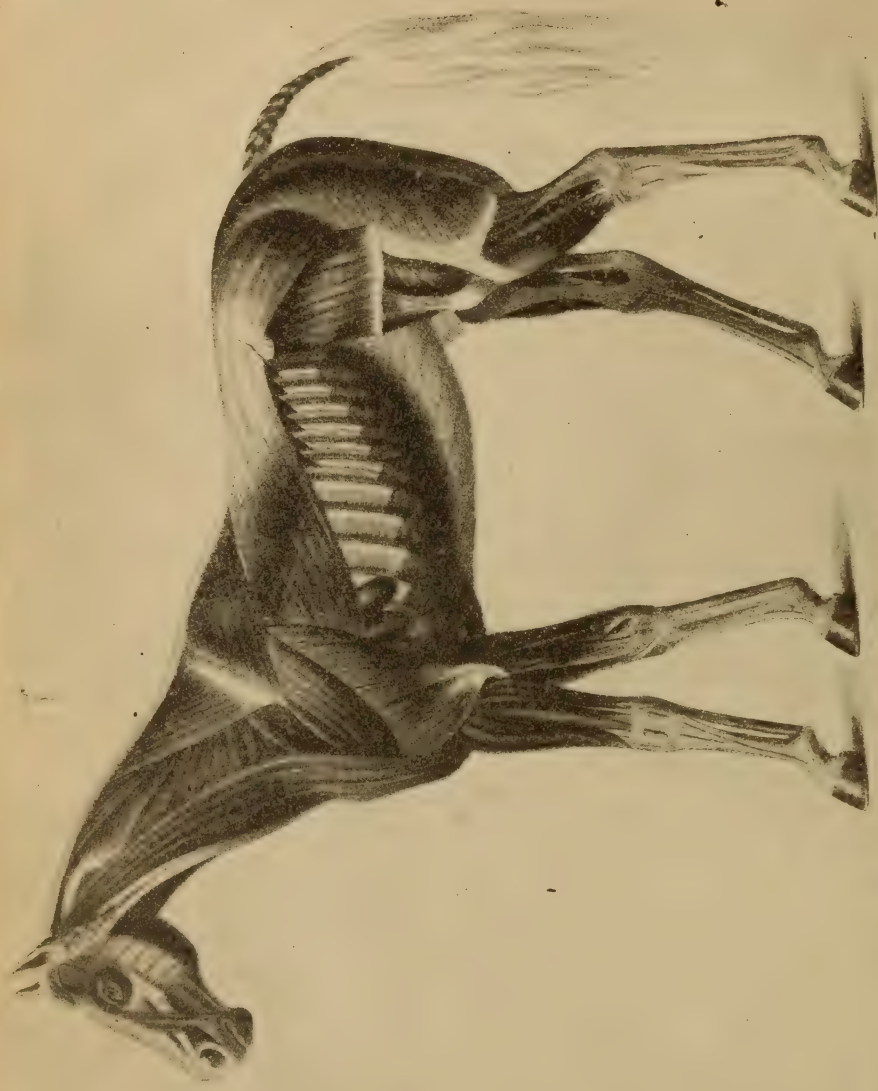
1. Brain.
2. Spinal cord.
3. Brachial plexus.
4. Sacrolumbar plexus.
5. Pneumogastric.
6. Sciatic.
7. Sympathetic System.
8. Solar plexus.

THE NERVOUS SYSTEM.

From Special Report on Diseases of the Horse—United States Department of Agriculture

THE NERVOUS SYSTEM.

Of all the domestic animals the horse more nearly approaches man in the generous distribution of nervous matter. He is therefore subject to the same diseases of the brain, spinal cord and nerves generally which afflict man. In certain portions of the body, especially in the vicinity of the stomach, heart and lungs, the nerves appear as thick networks, each group of which is known as a plexus.



SUPERFICIAL LAYER OF MUSCLES

From Special Report on Diseases of the Horse—United States Department of Agriculture

SUPERFICIAL LAYER OF MUSCLES.

The physical perfection of the horse is in no way better illustrated than by an examination of his muscles, remarkable for both their power and their delicacy. Unlike the human frame every point on the surface of the horse's body can be controlled by some superficial muscle. This is well illustrated by the twitchings of the skin to drive away flies.

give it in two feeds night and morning. If necessary repeat until the desired result is obtained, which will usually happen in less than a week." Thus writes L. O. Follo of Lake Lillian, Minnesota, and continues: "With us this simple remedy has never failed to give the desired result. By feeding a small quantity of oats to the cows for a couple of weeks before they are due to calve, they will seldom fail to clear off the afterbirth properly."

The same testimony as to the good effects of oats in this regard are given by other experienced farmers, one of them using whole oats, after the cow has had a pail of thin, warm gruel and a few quarts of colostrum (the first milk secreted after delivery).

What, When and How to Feed the Calf.—In dairy districts few calves are raised except on skim milk, and very satisfactory dairy stock can be made by this process if a few simple rules are intelligently followed. The young calf should be taken away from its mother not later than the third day, and for two weeks given from ten to fifteen pounds of full milk, not less than three times a day. At the end of two weeks some skim milk may be substituted for a portion of the full milk, making the change gradually until in three or four weeks skim milk only is fed. Full milk of the Jersey or Guernsey cow is often too rich for the calf, and part skim milk should be used from the very start.

At the end of a month or six weeks the calf will do nicely on two feeds per day. Skim milk contains all the elements of full milk except that of fat, and we can, in a measure, make up for this with cheaper substitutes. Probably the best simple substitute is flaxseed, which should be boiled until reduced to a jelly and a small quantity given at each feed, stirred in the milk. Oil meal is cheaper than flaxseed, more easily obtained and serves practically the same purpose.

Feed each calf tied by itself with a halter, in comfortable quarters, with a rack in front of it for hay and a box for meal. For feed use whole or ground oats, bran, oil meal, or a mixture of these. By the third week have a mixture containing the bran feed at hand, and as soon as the calf is through with the milk, slip a little meal into its mouth. It soon learns the taste, and, following that instinct so strongly marked, takes kindly to the meal in the box and in a few days eats with the regularity of an old animal. Have the meal boxes movable and place the meal in them sparingly, emptying all that re-

mains before each feeding time. Change the kind of combination of grain if the calf seems to tire of what is given.

A prime requisite to succeed in calf feeding is regularity—let the calves be fed at the same time and in the same order each day. Next to regularity, regard the amount of milk fed. While fifteen to eighteen pounds of full milk is a ration, with skim milk from eighteen to twenty-four pounds may be fed, depending on the ability of the calf to assimilate its food. More skim milk calves are killed by over-feeding than under-feeding. Milk should be fed at blood temperature, say 98 to 100 degrees, F., and a thermometer should be used in ascertaining the temperature. The feeding pail should be kept scrupulously clean by daily scalding, a precaution often neglected.

In feeding heifer calves that are to be kept for cows, it is not a good plan to make them fat. If this is done the habit of keeping fat becomes fixed, and a fat dairy cow is never a good one. The cow that will get fat while giving milk does not put the feed she eats to the best use.

Bull calves that are to be made into beef or sold for veal may be fed shelled corn in greater quantities than would be good for a heifer that is to be kept for a cow, for we want them to get fat and keep fat whether they are sold at two months or two years.

Teaching the Calf to Drink Milk.—It is advisable to let a new-born calf suck for two or three days, until the first milk in the udder is drawn out and the teats are made pliable by the sucking of the calf. After that the calf may be taken away from the cow and taught to drink milk. This is not a very difficult operation, if properly performed. Do not take a pailful of milk and try to handle it and the calf at the same time. Pour a little milk in the pail, put a finger in the calf's mouth and get it to put its nose into the milk. A calf is liable to "bunt" the pail out of your hand unless you are watching for such a move, and when there is but little milk in it, it can be held in one hand. If the arm is held rather loosely, the bunting will not spill the milk, and the calf soon gets over the disposition to increase the quantity of milk by this operation.

After the calf has begun to get the milk, slip the finger out of its mouth and let it drink if it will. If it will not drink, try again, and it is a very dumb calf that will not learn to drink in three lessons. It is useless to kick or otherwise abuse the calf. The punishment conveys

no lesson to the calf and only makes what is usually an unpleasant job worse. Nor is it a good plan to try and starve a calf into learning to drink. It may not get enough for the first two or three times when we are trying to teach it to drink, but most calves would starve to death before they would learn to drink without being taught how. It does not pay to allow a calf to get very hungry. What we want is growth every day and as much of it as possible.

CATTLE DISEASES

Cattle, like all other live stock, are subject to a variety of diseases caused by calving, overfeeding, exposure, parasites, etc. In a majority of cases the simple remedies for indigestion, colds, rheumatism, or for diseases of the skin, eyes, hair, etc., which are given to one class of live stock, may be applied to another.

Dry Scab on cattle, appearing around their eyes and in blotches on their body, making them lose their hair, is thus treated: Take sulphur, two parts and vaseline, four parts; make an ointment and apply every other day, until three applications have been made. This usually stops the spreading of the scab, which is caused by a parasite.

Clover Bloat is quite common with cattle. "Cold water poured on the back from horns to root of tail is said by one to cause the gas to pass off and relieve the animal," says M. E. D., in the *Drover's Journal*. "It will perhaps take twenty-five bucketfuls. Another remedy which is said to never fail is to place a round piece of wood, made for the purpose, in the animal's mouth and secure it by means of strings or straps, as a bit is held in a horse's mouth. The ball should be one inch and a half in diameter. The rope or straps to form the head stall should be attached to each side. Theory: It causes the animal to chew continually; this starts the saliva, which, no doubt, causes the gas to escape."

Ophthalmia, or Eye Disease in cattle, has spread widely throughout the country of late years. In some places the cattle simply have sore eyes, and in others the infection is more serious and a greater or less number go blind. The loss is not so much from the number that are blinded as from the unthriftiness occasioned, and the diminished milk flow in dairy cattle.

This disease is infectious, and when started in a herd is likely to attack a large per cent. of them before running its course. It occa-

sionally affects sheep, but rarely horses. It has been attributed to a variety of causes, as the pollen from some plants, and to dust. The disease does usually occur at a season of the year when both pollination and dust are at their most irritating stage, but the best authorities believe that these are only secondary causes. The germs that have been found are pus-producers.

The symptoms are local and general. The body temperature is raised, the appetite interfered with, and rumination checked. In the mild cases these symptoms are not marked. When first affected, one or both eyes are held nearly closed, the lids swell, and tears pour over the face. A whitish film forms over the eyes, which may become dense. The cornea may bulge forward, owing to the pressure of the abscess from within. Yellow spots from the size of a pin head to that of a grain of corn form, and from the margin will radiate reddish lines. These are abscesses, and when they heal, whitish scars will take their places. One eye may be attacked, and then the other. The course of the disease will last from three to six weeks, but it rarely happens that there is complete blindness in both eyes.

The treatment is comparatively simple. Keep the badly affected cattle in the shade or in the barn if necessary, during the middle of the day, to prevent aggravation. Locally, apply equal parts of finely-powdered boracic acid and calomel, by means of a small insect powder blower. This can be done quickly with little restraint, and is preferable to an eye wash for the animal.

Blackleg—Vaccination as a Preventive.—All acquainted with the deadly effects of blackleg know that most cases occur in the summer and fall. Until within comparatively a few years there was no known effective preventive of this deadly disease. There is yet no effective remedy known, rowelling and the use of setons having been pronounced worthless.

Investigators have decided that the disease is infectious, but not contagious; that is, it is caused by germs that live in the ground, upon plants or in water, and that microbes find an entrance into the body through punctures caused by briars or stubble, or by means of the feed eaten or water drank by the animal, and not that the germs are conveyed from one animal to another by merely coming close together.

If a blackleg carcass be skinned and the blood and juices allowed

to enter the soil, or if such a carcass be allowed to decompose without being buried, the germs form spores, or "go-to-seed," and in this form they may live in soil for many years, ready to begin life anew as soon as conditions are favorable. Thus the pasture may be a constant source of infection. To prevent this the carcass must be burned immediately, or buried at least six feet under the ground.

The disease is not nearly as common as formerly, but there are still districts that are infected and in which loss from it is considerable, and usually among young, well-kept cattle from four months to two years old, though other cattle are sometimes attacked. The germs are usually found upon low, rich land, and as the spore or seed of the germ is very hardy, it may be dried upon the grass made into hay from such land, and produce the trouble when fed in winter.

The symptoms are sudden onset with high fever, difficult breathing, stiffness, lameness, colicky pains, loss of appetite and great depression. Swellings occur upon the body, about the thighs, chest, neck or shoulder, and these have a peculiar crackle when pressed upon by the finger. They are filled with gas. The course of disease is very rapid, only lasting from a few hours to a few days, usually not more than twenty-four hours. Very few victims recover, and treatment is useless in the majority of cases.

Deadly as is the disease when once it has possession of an animal, there has been discovered a very effective preventive of its attack—vaccination, which has been practiced for several years. It has passed beyond the experimental stage and may be relied upon to greatly diminish the loss from blackleg.

By vaccination is understood the injection into the system of a minute amount of attenuated or artificially weakened blackleg virus, for the purpose of producing a mild and clinically unrecognizable case of blackleg. This virus or vaccine may be obtained from a number of reliable firms, and is easily applied.

Should any hesitate to use the vaccine for fear its injection would develop an acute case of blackleg, it may be well to state that statistics from this country, as well as from Europe, show that such cases amount to less than one in two thousand among the several million animals which have been vaccinated during the past fifteen years; that is, since vaccination for blackleg was first introduced.

As to the protective value of vaccine, complete reports were

gathered last year from five hundred stock men in Kansas, covering their experience with blackleg in general, and with vaccination in particular. A tabulation of these reports shows that the estimated loss from blackleg in unvaccinated herds amounts to ten and one-half per cent., while the actual loss of animals due to the postponing of vaccination until the disease had appeared in these five hundred herds amounted to 2,360 head, or three and one-half per cent. of the total number of cattle. This great loss could easily have been avoided, if the cattle owners in the infected districts had vaccinated their young stock previous to the beginning of the blackleg season. Such figures speak for themselves, and prove that on farms where cases of blackleg occasionally occur it is advisable to vaccinate.

Milk Fever.—Obadiah Brown, member of the Rhode Island State Board of Agriculture and cattle appraiser of that state, has prepared a brief article on this subject, which has been issued by the Board. The article is really a prescription, and we take pleasure in republishing it. Mr. Brown says:

"My experience has been confined to my herd and to some of my neighbor's cows. My treatment is with laudanum and spirits of sweet nitre. When the cow is first taken, I give an ounce of laudanum and nitre in a pint of bloodwarm water sweetened with molasses.

"Shake up together in a quart bottle, hold up the cow's head, slip the neck of the bottle in the side of her mouth, between the grinders and front teeth, and let the liquid run down her throat. If this does not relieve her, she will bloat slightly and appear uneasy. In three or four hours give one-half ounce more of laudanum and nitre; repeat this dose as often as she becomes uneasy, or in three or four hours. If this does not relieve the cow increase the quantity until the medicine masters the disease.

"One of my cows had milk fever three years in succession. The ordinary dose did not relieve her. I gave two ounces of laudanum and two of nitre at one dose. It had the desired effect, and relieved her so that in a few hours she was on her feet eating hay.

"I have never known a cow with physic to recover from milk fever; with the above treatment, I have never lost a cow."

To cure milk fever by the Schmidt treatment, which is almost a specific, proceed as follows:

Dissolve two and one-half drachms of potassium iodine in a quart

of water which has been boiled previously, and keep the solution as nearly as you can at the temperature of body blood. Then milk every drop of milk from the cow's udder, and clean with soap and water; when dried, disinfect the udder and teats with a solution of zenoleum, one teaspoonful to a pint of water. Then take a small glass funnel and attach to same a rubber hose about four or five feet long; affix to the end of this hose an ordinary milking tube, insert the milking tube into the teat, and slowly pour in your solution, dividing it equally between the four teats; when this is done apply massage to the entire udder for five or ten minutes every hour until the cow comes to her feet. Do not allow the calf to suck during the time the cow is being treated. If the cow is costive, remove the contents of the rectum by hand. In case of a weak heart, small doses of aromatic spirits of ammonia may be given with water every hour. Avoid large and bulky doses or your patient may suffocate from them. If your patient is not on her feet in eight or ten hours, the doses may be repeated, but this is rarely necessary.

Garget, or Lumps in the Teats of Milch Cows.—Give one drachm of potassium iodide daily for eight or ten days, discontinue for about the same length of time, and repeat if necessary. Feed the cow on bran mashes and roots, with the usual amount of hay and corn-stalks for roughage, bathe the udder with hot water and hand-rub well. If this does not reduce the lumps, test for tuberculosis, which may be the causes of them, instead of garget.

Another remedy: Give the cow a tablespoonful of nitrate of potash three times a day in a bran slop, until the milk clears up. If there is a hard lump in one or two quarters of the udder, bathe it with warm water for half an hour three times a day till the lump disappears. Keep her at pasture as usual. Milk her three or four times a day as long as the trouble lasts. This ailment shows when the milk turns to thick, watery matter about like melted butter. The first sign is a little stringy pus which is observed in the strainer.

Scours in Calves.—"When scours begin in calves it is of little use to attempt to cure the disease until the cause of it is found and removed," says the *American Cultivator*. "Most frequently it is from indigestion caused by improper food, or food in an improper condition. We have known a severe case in a calf that was sucking its mother's milk, but we quickly found that she had been overfed with grain after

having been kept without it during the period that she had been dry. We have seen it caused by calves having their milk too sour when fed to them, and by its having been given too cold. A chill from a cold draught or from lying in a wet bed may result in causing a severe attack in the calf, and sometimes when it was the cow that had suffered.

"Remove the cause and then try to give a remedy. If caused by a cold, give some warm and stimulating food or drink; a little spirits, ginger tea, or something of that kind in the milk will help. Then give charcoal to correct any acidity in the stomach, the fine or pulverized charcoal being the best form, with warm mash, warm and dry beds; and even a warm blanket if the calves are sick enough to keep still.

"It is desirable when possible to remove any animals having this trouble to a clean place, and to not only cleanse, but disinfect any place they have been in before putting them back again, or using it for others. Spraying or washing with a strong solution of carbolic acid, or of corrosive sublimate, is not only desirable as a deodorizer, but as a destroyer of disease germs. Spraying is the better way, as the spray can be made to penetrate into cracks and to reach corners where washing would not touch."

To Keep Flies Off, the following mixture is recommended as an application for the dairy herd: Fish, seal or tanner's oil, one gallon; crude carbolic acid, four ounces, and coal oil, one pint, all well mixed and rubbed on all parts except the udder. Two applications per week can be easily given at milking time, and will render the cows quite repulsive to all kinds of flies, bots, etc., but not at all objectionable to attendants or milkers. It is expedient to attend to this matter, which will prove both humane and profitable.

CHAPTER XX

THE DAIRY

Milking the Dairy Cow—Cleansing of the Pails—Straining the Milk—The Dairy House—Butter Making and Its Secrets—The Cellar—Keeping the Milk Cool—Don't Overwork Your Butter—Packing Butter for Winter Use—Uses of Skim Milk—Cheese Making—Home-made Cheese—Factory Cheese Making—Commercial Side of Dairying.

The proper running of the dairy commences with the proper milking of the dairy cow, and the best advice that can be given is contained in these directions: Keep your person—especially your hands and arms—scrupulously clean; do likewise with your pails, and milk the cow as dry as possible. Before proceeding to milk examine the udders of the cow carefully, and if they show no signs of garget, or other disease, wash them thoroughly. Some recommend cold water, winter and summer, as its use braces the animal and repels heat. Wipe the udders dry before milking. This rule should receive special attention when faults, such as stringiness, have made their appearance in the milk.

Treat the cow with patience and kindness. We have already seen that excitement of any kind on the part of the cow has a bad effect upon both the quantity and quality of the milk.

Proper Cleansing of the Pails.—Scalding the milk-pails with water alone will not cleanse them, as hot water causes portions of the milk to curdle. First wash the vessels with lukewarm water, dissolving a teaspoonful of carbonate of soda (washing soda) in every quart of water used. Scrub well and rinse with clean, cold water, and then scald, using more carbonate of soda in the boiling water, then again rinsing with clean, cold water.

How to Strain Milk Clean.—The ordinary fine wire strainer does not remove all the impurities from milk. In addition to straining through wire milk should be also strained through four thicknesses of

butter-cloth, which may be fastened to the wire strainer with a tin ring to slip over it. Even then the soluble impurities will pass through with the milk.

The Dairy House should be separate from the other buildings in order to receive good ventilation and pure air. Where five or more cows are kept a good separator is necessary, not only as a matter of economy in time and labor but to secure the most cream out of the milk, and the most butter out of the cream, and to have both uniform in quality.

There should be plenty of tin milk-vessels, so that with care in keeping clean there will be no risk of contaminating odors. There must be a proper regard to cleanliness in all of the management of the cans, milk and cream, as in straining no separator will take dissolved filth out of the milk. There must be a good thermometer in order to see that the temperature is right at different stages of butter making, as uniformity in quality cannot be secured by guessing at the temperature. A good churn that is easily cleaned and kept clean is also important, while the best of cans, the best of feed and the best of utensils will not produce good butter without skill on the part of the makers.

BUTTER MAKING AND ITS SECRETS

The great secret of making butter so that it will have a sweet, nutty flavor, as well as possess good keeping qualities, is to churn the milk at the proper temperature—from sixty to sixty-two degrees—and, after the butter is made, to have ways and means of keeping it cool until ready for consumption or marketing.

The first thing to have then is a thermometer, and in these days of cheap conveniences there is no excuse for any housekeeper or butter maker being without one. If you have not a supply of ice bring the temperature of the milk to sixty-two degrees by setting the churn in a vessel containing warm or cold water as needed, stirring during the operation to render the temperature uniform. As soon as sixty-two degrees is reached the churning should begin at once, and should occupy about thirty minutes. Never add water to milk until the butter has come, when a pint of cold water will make it gather quickly and nicely. The first essential in preserving well-made butter

is to keep it very cool—down to thirty-eight or forty degrees if possible. Ice and a refrigerator are necessary, however, in order to get the temperature down as low as that mentioned. Often, however, the farmer, or his wife, must depend upon a cool cellar, or milk-house, whether he is making the butter for quick consumption or intends to pack it for fall and winter use.

The Cellar.—This should be perfectly clean and free from everything which might in any way contaminate the air. All decaying boards and vegetables, no matter in what state of preservation, should be removed and the walls whitewashed or washed over with a solution of copperas and water. Thorough disinfecting of every portion of the cellar is a necessity.

Provide racks for the milk-pans and have the latter of bright, new tin, which is the best material. Discard any which are old and rusty. Skim when just turning sour and keep the cream in the very coolest portion of the cellar. Churn every other day.

To cool the cream sufficiently, set the vessel containing it in a tub of cold water in the cellar over night. Have a woolen blanket, wet in cold water, to lay over the top. This keeps out the warm air, sets up an evaporation and tends to keep the cream cold. The churn should be well cooled with water also. Churn the first thing in the morning. When the butter shows signs of coming add a handful of salt and several quarts of cold water, according to the amount of cream, to reduce temperature. Take out the butter, or draw off the butter-milk, as the case may be, and wash thoroughly in water as cold as can be obtained. Do not churn too long, but stop when the butter is in grains, before it is gathered into a lump.

After washing until free from butter-milk salt according to taste. Work the salt in thoroughly and evenly, pressing with the ladle to exclude moisture, then set away to harden again before reworking very lightly, so as not to injure the grain.

Advice to set milk in pans in the cellar is given on the assumption that the person advised has no portable creamery and is still using the common round pan. But to a person who has a creamery and is out of ice the advice is to use as cold water as can be had, changing it fully as often as it equalizes temperature with the milk. However, those farmers who are without ice and improved apparatus for cream raising should set milk in the cellar.

Other Ways of Keeping Milk Cool.—The only satisfactory way for the farmer with the average conveniences is, as stated, to use cans that can be set in water. When there is any quantity of milk, it would pay to build a milk-house over or beside the well.

If the amount of milk handled does not warrant so much expense, a large box to cover the milk tank containing the cans will answer the purpose. All that is necessary to do is to shade the cans from the rays of the sun. The tank must be large enough to contain all the cans and a sufficient amount of water besides, to insure against its temperature being affected by putting in the warm milk. It should be deep enough to allow the water to reach well above the milk in the cans. By arranging pipes to carry off the surplus water from the tank into the watering troughs of the stock, all the water used can be pumped through the tank, thus changing it several times a day and keeping it cool.

A long tank has some advantages over a round or square one. There is not so much danger of upset. With slats nailed across just far enough apart to let the can set between them, there will be no trouble in this line. By having several escapes at different heights, the quantity of water in the tank can be regulated by means of plugs, to close all but the one that allows the water to escape when it has reached the desired height. As each can is not likely to contain a like quantity of milk, it is a good idea to have several convenient weights handy to regulate the weights of the cans.

Don't Overwork Your Butter.—It is possible to work butter too much. This repeatedly has been proved. Indeed, overworked butter is quite as poor as underworked butter. A gilt-edged buttermaker asserts that the delicate, nutty flavor of his butter is not added to his butter, but is simply not permitted to escape from it. His theory is that only butter in which the globules of fat are unbroken can have the nutty flavor. He says that his butter is so made that the fat globules are whole when the butter is finished. The breaking up of the globules takes place in the mouth of the consumer, and as they break up, the peculiar nutty flavor is perceived. It would follow from this theory that all butter worked too much would be wanting in flavor. One thing is certain: Butter overworked is butter that is not agreeable to the consumer.

How to Pack Butter for Winter Use.—June is considered by many to

be the best month in which to pack butter for fall or winter use. One must be very particular, however, in the making and packing of it, in order to have good-keeping qualities. The cream will be best if it is skimmed while the milk is sweet, and then allowed to stand just long enough to become a little acid. One also must be sure that the cream is not tainted from wild onions or any noxious weeds; if there is an odor of onions it may be removed by placing a small lump of saltpeter about as large as a pea, in a cream can, while one is getting a churning. Wash the butter in cold water, then salt, using one and one-fourth ounces for each pound of butter. One must be sure that the jars are sweet and clean. If they are buried in the earth for a few days all impurities will escape. After the butter has been worked twice, pack solidly in a good, clean jar, free from cracks. Cover with a thin cloth and put over this one-fourth inch of salt. Tie over this a light brown paper or thick cloth, and keep in a cool, dry cellar. Butter may also be kept by making balls, tying up in cloth, and putting in a strong brine.

Uses of Skim Milk.—Very few farmers value the skim milk at a figure high enough to cover its real worth. It is rather looked upon as a by-product to be got rid of in some way and usually the handiest way is to feed it to hogs, and while this method of disposing of it returns its full value to the owner of the hogs, the credit is not often given to the milk. All the actual food value of the milk is left in the skim milk and butter-milk, the butter being simply a little fuel which is extracted and consumed to keep up the energy of humanity.

Skim milk is counted by chemists to be worth something like twenty cents per hundred pounds. This is what the chemist finds when he analyzes the milk. There is something in the milk that escapes the delicate tests of the laboratory. It gives to any animal, whether it be hog, calf or man, more food to the hundred pounds than can be bought for twenty cents in any other form. The man who drinks skim milk is nourished by it as much as he would be if he ate meat, and during hot weather he can drink milk freely and not feel the need for meats, doing his work on this diet with much more comfort than if he ate meat.

Fed to pigs, it seems to supply a need that gives them a capacity to make better use of their grain feed; they grow much more rapidly than they would if only fed all the grain they could eat.

There is nothing better for laying hens than skim milk or buttermilk, and when given all they will drink of this they lay well and require but little grain.

CHEESE MAKING

The making of cheese at the farmhouse is being largely crowded out by the work of the cheese factories. Being conducted by specialists, on a large scale, the manufacture has also become more profitable and scientific. We give below descriptions of how the cheese is best made at home and in the factory.

"To Produce Home-made Cheese is so easy I hope many will try to make a few for home use," writes Mrs. Alice Gwinn. "We only need to buy the hoops—a peck measure with the bottom removed makes one size, while a gallon pail makes another; a dairy thermometer which costs fifty cents, and twenty-five Charles Hanson rennet tablets, costing fifty cents, complete the preparation.

"One tablet is enough for one hundred pounds of milk. To make cheese, dissolve one tablet in a cup of water at night. As soon as the milk is drawn it should be cooled to 70 degrees. In the morning take the morning's milk, mix well with the night's milk, and heat gradually to 85 degrees. Then lift the boiler off and stir in the dissolved rennet tablet with a soft rolling motion until well mixed. Then cover for forty minutes and you will have a soft curd like clabbered milk. Take a long knife (I use my bread knife) and cut the curd into small cubes, let stand five minutes, dip off some of the whey and put the curd back on the stove and slowly heat to 90 degrees, stirring gently all the time.

"Now take from the stove, and have ready a clean board a little wider and longer than the diameter of the hoop you are going to use. This board should be supported on two strips laid across the wash-tub. Set the hoop on the board and put over it a yard of cheese-cloth, or a flour sack which has been ripped open will do, having first wrung it out in scalding whey. Then dip out some of your curd and put into the hoop, allowing the cheese-cloth to drop down as a lining for the hoop. Put in a layer of curd and sprinkle over it a little salt. Do not use too much salt or the cheese will be hard and dry. Continue putting in curd and salting it until the hoop is full or all the curd is in. Then fold the cheese-cloth smoothly over

the top and have a follower, or cover, made to fit nicely into the hoop.

"Take this to your cider press and screw it down a little. In two hours tighten the screw a little; about noon tighten a little more, and at night repeat the operation. In the morning take from the press, turn over and press again. That evening take from the press, remove the cloth and rub with sweet butter. Wrap in a clean cloth and lay on a shelf in a cool place. Continue to rub with butter and turn each morning until you want to cut it. We like them at about fifteen days old. I sell a nine-pound cheese for from 75 cents to \$1.00 each."

Factory Cheese Making.—"The cutting and cooking of the curd is an important matter in the process of cheese making, if not the most important, for if the curd is cut right and cooked properly a good cheese will likely be the result," writes Herbert R. Gibson, instructor in cheese making in the Ohio Agricultural College.

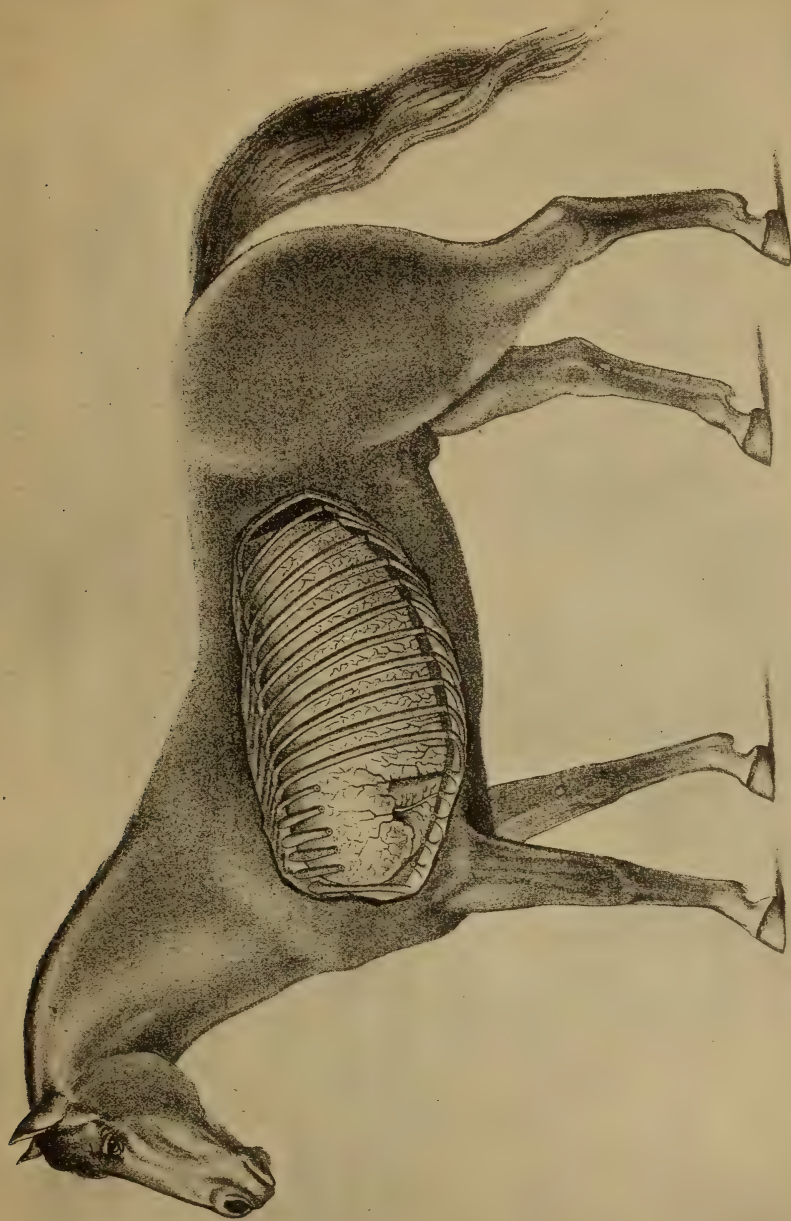
"By the use of the rennet test, the maker, knowing the condition of the milk, should cut the curd so that a good cook may be obtained when the curd is ready to dip. When the milk is overripe it is well to cut a little finer than when a slow-working curd is expected. With a glassy curd, when the fermentation is checked it is well to cut a little coarser, so that less moisture will be expelled from the curd.

"The size of the cubes that may be cut depends to some extent on the season of the year. In the spring and summer, when the curd is easiest to cook, the cubes may be cut larger than in the fall, but as a general thing the curd should not be cut too coarse. In different localities, with different lots of milk, it will vary some. When the milk is set and is thick it should be cut as soon as it will break clean over the finger.

"In cutting I use the horizontal curd knife first. To insert the knife, set the upper end of it near the handle on the top end of the vat. Now swing the point of the knife down into the curd, the edges of the blade cutting into it and taking a circular course until the knife has taken a vertical position parallel with the end of the vat. In putting the knife in, in this manner, the curd is not jammed and the knife is in position to be moved the length of the vat. Now, keeping the knife in the vat, we must turn it without breaking the

curd, so that we can return the knife to the other end of the vat. Using the side of the knife next to the uncut curd as a center, we turn the knife around through a half circle and are ready to cut the curd through to the other end of the vat. When we have cut the entire vat of curd in this manner, the knife is taken out in the reverse order to which it went in. Now, laying the horizontal knife aside, we take the vertical knife and insert it in the same way that we did the horizontal knife. Next, draw the knife over the same course that the other knife went and we have the curd cut into slips the length of the vat, about one-fourth of an inch square. Now, cut crosswise of the vat, being careful not to jam the curd, and we have it cut into cubes. If the curd needs to be cut finer use the same knife and cut lengthwise and then crosswise of the vat again. A quick stroke is necessary to cut the curd now, as it has become firmer and finer and will slip between the blades of the knife easier.

"Now that we have the curd cut, the next thing to do is to loosen it from the sides and bottom of the vat by the use of our hands. After this has been done, stir the curd up twice with the hands, then once around with the rake and the curd will be ready for the steam or a fire started under the vat, as the case may be, and the temperature should be raised to 100 or 102 degrees Fahrenheit, as may be needed to get the proper cook when the whey is drawn. Sometimes 98 degrees will be high enough if there is time to firm the curd before dipping. It is not well to run a vat too fast with normal working milk, for a cheese with too much moisture will likely result, and there will be a loss in butter fat, which means a small yield. As soon as we start the curd to cooking, we must keep it moving, so that it will not settle to the bottom of the vat and mat together again. Do not allow the curd to collect in the corners of the vat, and draw it out of the faucet just before turning the steam on and just after turning the steam off. As a curd is a poor conductor of heat, we should take from twenty-five to thirty minutes in raising the temperature of normal working milk to 100 degrees Fahrenheit. If it is heated too rapidly, it will cook the cubes of curd on the outside and hold the whey inside them and the result will be a mottled, whey-soaked cheese. In cooking an over-ripe curd the temperature should be raised faster and higher than in a

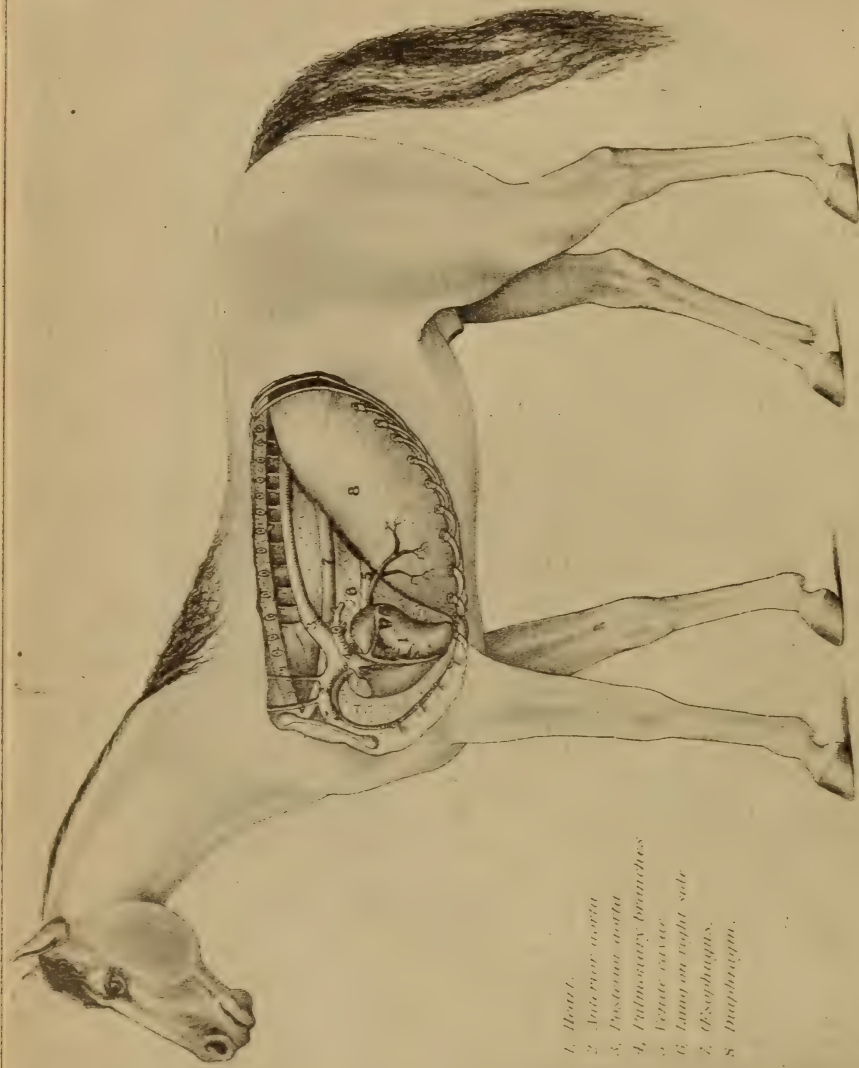


POSITION OF THE LEFT LUNG.

From Special Report on Diseases of the Horse—United States Department of Agriculture

POSITION OF THE LEFT LUNG.

No better illustration can be afforded explaining the remarkable endurance of the horse as a long-distance traveler, or of his wonderful bursts of speed, than the above. It must also be remembered that, on account of the space occupied by the heart, the left lung is considerably smaller than the right.



1. Heart.
2. Anterior vena.
3. Posterior vena.
4. Trachea.
5. Pulmonary branches.
6. Venae cavae.
7. Lung on right side.
8. Diaphragm.

INTERIOR OF CHEST SHOWING POSITION OF HEART AND DIAPHRAGM.

From Special Report on Diseases of the Horse—United States Department of Agriculture

INTERIOR OF CHEST SHOWING POSITION OF HEART AND DIAPHRAGM.

The prime requisites in a valuable horse are that he shall be sound of heart and lung, and this is especially necessary in the animal which is bred for speed rather than work. In fact, it has been ascertained that the heart of the race horse is considerably larger in proportion to the weight of the body than the heart of the draught animal. A horse's heart averages $6\frac{1}{2}$ pounds.

normal working curd or the acid will get the start of us and we will have to draw the whey before we have a good cook on the curd. We should not cook a curd at a higher temperature than is absolutely necessary, but get a cook on it if we have to heat to 110 degrees Fahrenheit.

"When the acid comes too fast it is a good plan to draw the whey down so that it just covers the top of the curd. If this does not check it enough, add forty or fifty gallons of water a degree or two higher than the temperature of the curd.

"To get an even cook on the curd it should be stirred from the time it is cut until it is cooked. Some factories use a steam stirring apparatus, but in most factories it is done with a common wooden hay rake. The curd is stirred in a rolling motion, making it boil up on the opposite side of the vat. The rake is held with the teeth up. Starting at one end of the vat, the rake is worked down the length of the vat, making the curd roll on the opposite side from the operator. Now stir from the opposite side of the vat back to the starting point, continuing round and round until the curd is well firmed, care being taken all the time not to jam the curd, or the fat will be lost in the whey. How are we to know when the curd is cooked? There should be one-eighth to one-quarter of an inch of acid on the curd when the whey is drawn. Here it will be seen that our judgment comes into play, to know how fast to heat a curd in order to have it just firm enough when the acid comes. The curd must not be mushy and soft, and when a double handful is pressed together in the hands and one hand removed it should not remain in a mashed-up mass, but should fall apart readily. An overcooked curd will give a 'corky' cheese, while an undercooked one will give a salvy, weakbodied cheese that will stick to the trier when a plug is drawn."

Commercial Side of Dairying.—We will assume that everything connected with the production of the raw material or milk has been conducted correctly, from the selection of the herd to the milking of the cows and the handling of the milk. Assuming the above we will turn to the commercial side. This side, in some instances, begins when the product is finished but not packed; in other instances it begins when the milk has been drawn and is to be disposed of as milk; and in still other instances it begins at the point where it is

determined what to do with the milk, whether to sell it as milk, raise the cream and sell it, make butter, cheese, or even perhaps ice cream. Then again, the commercial idea steps in and decides whether the butter and cheese are to be made at home, or the milk or cream for the one sent to a public creamery, or the milk sent to the cheese factory to be converted into the other.

But if a farmer is a thorough dairyman, or determined to become one, he will do well to make butter at home. If he patronizes a public creamery he must pay four cents a pound for the making and marketing of his share of the butter, to say nothing about the hauling of the milk or cream or paying for having it done. All this will be saved if he makes his own butter. In addition, his by-products, skim milk and butter-milk, would be worth much more than that returned from the public creamery.

If one makes butter at home and makes a good article, such as can be made in a properly fitted-up private dairy house or room, a market can be readily found for it if put up in attractive form or package. Many dairy farmers living near villages and cities pack butter in stone crocks holding four or five pounds each, taking back the empty crock when delivering a filled one.

In many sections of the country, round boxes—holding usually five pounds—made from heavy paper and veneers of wood, and sometimes from wood pulp, are used to pack butter in and are not received back, being used but once. These packages are very desirable when one ships or delivers butter to a dealer who in turn supplies private customers with it. When such boxes are used the maker of the butter can have his name and the name of his farm—for it should have a name—printed on them, or on a label pasted on the side or cover of each box.

Another and very attractive way to prepare butter for private customers, either direct or through dealers, is to print it. This means molding it in wooden molds engraved so as to print the top of the cakes; these are usually called prints and are generally made for one pound packages. A very popular form has four engravings, and creases the butter so as to give it the appearance of four squares or prints, each containing one-quarter of a pound. Another form of mold makes a thicker one-pound print with two engravings. In either case the division can be made complete with

a knife at the creases without marring the engravings. The engravings are tasty and in a choice variety of designs, including roses, rosebuds, grapes, sheaves of grain, and acorns.

Butter prints should be wrapped in parchment paper, and if sent to market instead of being delivered direct to private customers they should be placed in a butter carrier, consisting of a hardwood box containing trays of the right depth so that the printed tops of the butter will not be defaced. Many enterprising dairymen have their cards printed on the parchment paper wrappers.

If the dairy farmer is located near a village or city, it will pay in many instances to establish a milk route. In some cases cream can be sold to hotels, ice-cream makers, restaurants and to soda-fountain proprietors. If such openings already have been taken, doubtless the next best thing to be done, as a rule, will be to make strictly first-class butter and seek private customers for it in the same village or city. Such customers once secured are easily held, if the butter is kept up to a high standard of excellence.

Ascertain the amount wanted by each customer and deliver on a certain day each week. The delivery of butter to private customers affords opportunities for selling other farm and garden products, including poultry, eggs and by-products of the dairy, cottage cheese, for instance, which some dairymen make from their skim milk.

CHAPTER XXI

HOGS

Common Sense Treatment of Swine—Not a Filthy Animal—Cleanliness, Dryness, Sunshine, Pure Water, Healthful and Varied Food Necessary for Proper Raising—Portable Swine House—The Sow and Her Litter—Treatment Before and After Farrowing—Pig-eating Sows—Feed and Feeding of Swine—Green Feed—Warm Food in Winter—Curing Pork—Swine Diseases—Hog Cholera, Mange, Lice and Scours.

The uncounted wastes of the farm can often be turned into pork and produce a neat sum of money without very much trouble. A couple of pigs will grow and thrive on scraps that are ordinarily thrown away, and such scraps make the best of pork. Any one who has never made any account of the waste vegetables from the garden, the small potatoes, the cabbage and lettuce leaves, the pea pods and all such things that are usually cast into the backyard will be astonished to find how valuable they are when worked into pork by a hungry pig. Work the scraps and waste matter into pork. This keeps the place cleaner and saves a waste that is indefensible.

But this cannot be done at haphazard. Careless methods will not pay even with the pig. He cannot do his work faithfully if you neglect yours.

Perhaps some farmers would object to the assertion that in order to get the best results from the raising of swine they must be treated exactly as they care for their cattle, their horses or their children. Cleanliness, pure water and feed, sunshine and good ventilation, dry living and sleeping quarters and plenty of exercise are all essentials.

It is a mistaken idea that the hog is naturally a filthy animal. The wild hog is always clean when we consider that mere mud is not filth. He seeks the mud to wallow in to provide against the attacks of insects, and at a time in the year when these do not bother him he is never seen with mud on him. He likes cleanly feed, although

his tastes are different from those of the ox or horse. He eats grasses, roots and nuts from choice and roots in the soil for roots and grubs.

The hog of civilization is compelled many times to be a most filthy brute. He must seek his feed in mud that is polluted by excretions and laden with germs, and if he is compelled to seek a wallow in which to escape insect pests he must go to mud as filthy as it can be made because he can find no other.

The way to keep hogs healthy is to provide healthy surroundings. That veteran swine breeder, James Riley, of Thorntown, Indiana, keeps his hogs healthy by providing well ventilated dry pens in which the sunshine has free play. His sties are warm, so that but little bedding is required, and that is renewed very often. The warm stables also prevent the animals from piling up and sweating, only to catch cold when they come out to eat. The pens are disinfected twice a week. The feed is such that bone, muscle and flesh grow symmetrically, each in its proper proportion. When a hog dies from any disease it is taken out and burned and the path over which the carcass is taken is thoroughly disinfected. He believes precautions are better than remedies, and by using every precaution has but very little use for medicines of any kind.

The proper way to build a swine house is to make it small enough so as to admit of moving it to fresh ground at frequent intervals. These houses may be built six feet square for a sow and pigs, and somewhat larger for more animals. When it comes to sheltering as many as twenty hogs the problem is beyond the average farmer, and more pains must be taken in providing for them. For ordinary farm use three or four nice, comfortable, portable houses in which a sow and her litter may find shelter will fill the bill nicely. For winter protection for feeders that are running after cattle it is very easy to build a perfectly comfortable and sanitary straw shelter, convenient to the feeding yard, in which the hogs can sleep or lie during stormy weather. The elaborate and costly house is not what is needed on the average farm. What is wanted is a shelter that will accommodate the pigs, and still not be a source of infection from one year to another. The portable house is one way of solving the question.

Swill, or milk mixed with grain, is too often regarded as drink, and no other is provided. The truth is that in addition to sloppy

food the hog needs pure water, and should have access to it at all times. Do not make the mistake of thinking that water out of a mud hole will answer every purpose; it should be pure water, as clean as that given to dairy cows, or horses. Impure water contains the germs of worms and other internal parasites and also of disease, and should never be given to any kind of stock.

One of the best ways to give a hog the exercise he needs, and at the same time allow him to do his part in providing himself with a variety of food, is to furnish him with a chance to root. Often, however, the farmer shuts him up on a floor and feeds him and then wonders why he has rheumatism, why he has snuffles, why his back breaks down and his legs tumble sideways, why he has worms and dyspepsia and lacks tone and vigor. And then when the pig is allowed on pasture a ring is put in his nose so that he cannot root as his nature dictates.

Hogs are omnivorous. To keep in vigorous health they must have different kinds of foods. If a hog is shut up this variety must be furnished to him, earth included. If turned loose with his snout left in working order he will see to that part. Perhaps you do not like to have him root in the pasture. Generally he will not root, and when he occasionally does the grubs and cut-worms he takes are worth more in his stomach than in the sod.

Corn is good for a hog, and so is water, but as a steady diet they are unsatisfactory. Any one can satisfy himself regarding this by trying such a diet himself. The hog is not so deserving as a human being, but to do well he must be treated in the same rational way, and if he does not do well there is little of pleasure or profit in having the hog on the farm.

THE SOW AND HER LITTER

In breeding a sow, no matter what she may be, always secure the services of a pure-bred boar. A grade boar may appear to be all right and be a good-looking animal, but there is not in him that prepotency that makes him certain to produce progeny as good as he is. There is no objection to crossing two pure breeds of hogs, but this should never be followed up unless it is very carefully watched, as cross-bred animals are liable to show degeneracy in their progeny, while a first cross rarely does this.

According to Coburn, young sows carry their pigs from 100 to 106 days, while old sows carry theirs from 112 to 115 days. Spencer, writing of English pigs, says: "The variations in the time a sow will carry her pigs are very slight, and these are pretty well regulated by the age and condition of the sow; thus old and young sows will most frequently bring forth a day or two before the expiration of the sixteenth week. Sows in fair condition will generally farrow on the 112th day while strong and vigorous sows will go a few days over time."

If we are to have spring pigs the sows should be bred in January. The sow that is bred then will farrow in time to allow her pigs to be sold at six months of age the next November and these should weigh 200 pounds at that time.

To have good pigs the feeding of them should be begun as soon or even before the sow is bred. The fat sow does not produce strong pigs as a rule, and the poor sow does not provide enough milk for them to make them grow as vigorously as they should. It is not the fat sow we want as a breeder. It is the one with strong bones and massive muscles, and to get such a one we must feed for bone and muscle rather than for fat.

The breeding sow should be fed largely on bran and oats, with a proportion of corn. A good chop of half corn and oats by measure, and a thick slop of wheat middlings fed with attention to the appetite of the sow, will produce a vigorous growth, and the pigs from a sow so fed will come strong and vigorous, ready to begin to grow and keep it up, while there will be plenty of milk for them and the sow will not be in danger from milk fever, as she would be if made fat on corn during the period of gestation.

Many a good sow is ruined by improper treatment just before and after farrowing. Here is what C. S. Inckley of Norfolk, Neb., says on this subject. Mr. Inckley is a very successful swine breeder and knows whereof he speaks:

"First, I would like to have the sows in good strong condition, but not fed on corn exclusively—corn once a day and oats, bran and shorts for the bulk of the rations, so the pigs will be strong and vigorous—in fact, the less fattening food fed the sow for at least six or eight weeks before farrowing, the better. About a week before she farrows shut her up in a nice warm pen with a window or sun

door, so she can get the direct rays of the sun. Don't feed her too heavy the last twelve hours, give her plenty of short bedding, and when she farrows be on hand, but unless absolutely necessary don't disturb her. I like to have several due at the same time. Mark the pigs from each sow so you know where they belong, and if some sows have very large litters and others small ones, even them up by placing some from the large litters with the small ones, and your chances for raising a large per cent are much more favorable.

"After the sow farrows feed her very lightly. Now is the critical time, remember. For about three days the sow will be feverish and should have but little more than water or clean washings, and be sure there is nothing sour in either. If she shows signs of hunger give her a few potatoes, bran or a few oats, and then commence gradually to get her on feed, so that at ten days or two weeks she will be on full feed. By that time her litter will begin to take all the milk she gives, which they did not and could not do at the start, if on full feed. There has many a promising litter been eaten up, or died from scours or thumps from over-feeding the sow at the start. As soon as the pigs begin to eat let them have a side table to themselves. Let the sows in the pasture or lots, as exercise is very essential. If you only raise one litter a year, your pigs will be better to let the sows wean them. If not, feed them all the milk or shorts, or better still, both, that they will eat, and when you want to wean them commence feeding the sows lightly, and it will not be long before the pigs will forget they ever had a mother. One thing I wish to caution against—don't take them away with the sow on full feed, or one away at a time. If you do you are likely to have some spoiled teats and a feverish sow, and, not unlikely, an unthrifty one too, for some time. I consider a good pasture a profitable investment."

Pig-eating Sows.—After a sow has once eaten a part or all of a litter of her pigs, the best thing to do with her is to fatten and sell her, for she will never forget the practice. The way to prevent losses of this kind is to prevent the conditions that lead up to it. If the sow is properly fed before farrowing and properly attended to after the pigs come, there is only a very remote chance that she will develop the cannibal side of her nature. Pig-eating comes from a feverish condition and a desire for nitrogenous feed. Keep the sow

properly during the period of gestation and she will not feel this want. The corn-fed sow is the one that eats her pigs. Give her a ration composed of mixed feed, of which corn may be a considerable part, and nothing but water for twenty-four hours after farrowing, and after that begin with light feed, and she will not eat her pigs.

Scotch swine-growers give pig-eating sows flower of sulphur to break them of their cannibal habit. A few spoonfuls of the sulphur are fed to the sows in swill several days before and after farrowing. It is claimed to be a sure corrective of the pig-eating habit.

FEED AND FEEDING

The days when it was thought that all that was necessary to raise hogs was to have handy an old, well-filled swill barrel, however filthy, are happily passed. Dish water and general kitchen slops are no longer considered sufficient for the brooding sow and the growing pig.

It is a gross mistake to feed hogs dish water and general kitchen slops. The dish water is strongly impregnated with the alkali in the soap or powders used in washing dishes and kitchen vessels, and for that reason alone it is unfit for any animal to eat. The alkali prevents fermentation and digestion in the hog's stomach, just as it does in the human stomach, and for that reason it is sure to derange the digestive organs and produce disease in the swine. Feed no dish water to your swine.

It is an equally gross mistake to feed swine with swill that is so sour or so far fermented as to be really putrid. When swill, made up of kitchen refuse, other than dish water, begins to ferment, it may be fed with safety, but in a few hours the fermentation action begins to take on the putrefactive stage, and then the materials in the swill rapidly lose their possible food value and pass into a putrid form, in which they become poisonous. The hog can thrive on putrid foods no more than the human being.

Pure Water and Mixed Rations.—Hogs frequently suffer from lack of water, because farmers do not remember that whatever comes in liquid form is not a substitute for the clear and fresh water which all animals need. Most of the water that pigs get is as bad a substitute for the pure article as skim milk. It is largely the water used for the washing of dishes or the freshening of salted

pork. In this way the hogs get more salt into their stomachs than they require, and this also makes the hogs feverish and injures the quality of the pork. This sometimes makes the western pork, which is fattened in large droves and gets little salt, better than the pork made by the farmer who keeps but two or three pigs, and feeds them from the swill barrel filled with a mixture of dish water, skim milk and salt water. The water in which salt pork and beef are freshened is highly nutritious, as a good deal of their strength goes out with the salt when they are freshened for cooking. But the great majority of hogs would be healthier if they had enough fresh water, fruits and vegetables to offset the excess of salt that most of their drink contains.

As has been stated, experience has proven that both pure water and mixed rations are most profitable for the pig and the farmer. The thinking farmer provides a pasture of clover or blue grass for his pigs, and gets them up to 100 pounds or above with grass, wheat bran, skim milk and such nitrogenous feeds as make lean meat and bone. (Wood ashes make a very good bone food.) Then he feeds corn and oats, or bran, and toward the last feeds all the corn the animals will eat with a good appetite, and goes into the market with a finished product that he may be proud of, which has not cost him any more than a full corn-fed hog would have cost. When all farmers follow this course, then will American pork have come into its own and the price will rise to its true value.

Although corn is the most valuable food for hogs that are to be marketed, green feed is now considered as necessary for swine as for sheep or cattle. Every farmer, therefore, who owns hogs should plan to have succulent feed for them nearly every day in the year. Root crops should be planted in the spring for winter use, and rape should be sown for summer pasture unless there is a clover field available. Hogs like sorghum or sweet corn also. The healthy herd of hogs is the one that is kept in good condition by having a full supply of green feed all the time.

Sugar beets have been found one of the best things that can be fed to hogs. They are rich in sugar, which is changed into fat, and besides this they contain mineral matters of use in building up the frame of the animal. In Nebraska it has been found that beet-fed pigs need but little corn to make a thrifty growth, and that herds

fed a regular ration of beets grow to larger size at the same age than those fed almost wholly on corn, while they are less liable to the attacks of disease.

Wallace's Farmer recommends sowing rape for hog pasture. For this use it should be sown as early as possible. If rape is sown the first week in May it will be ready for use by the last week in June. In preparing the ground remember that too much care cannot be taken to put it in perfect condition, that it comes into use quicker than any other crop and furnishes more feed to the acre.

Warm Food in Winter.—Did you ever notice the avidity with which a pig will eat warm slops or grain mash, and the indifference he sometimes manifests toward cold food? It is apparent that the pig likes warm food, and the difference on a cold day between feeding a pig with warm food and cold food is very great. In the first place the pig is not nearly so well protected from the cold as cattle and sheep; and in the second place soft food is more adapted to its needs. When it is to grow at its best, much of the food fed to it must be given in the form of swill. If such food is fed in an icy condition the pig shivers after taking it. To take food thus it is a very different matter from taking it as warm, at least, as blood heat. When thus fed the pig can go and lie down in comfort.

It may cost fuel and labor to thus heat food for pigs in winter, but it ought to be done. Even breed sows which are wintered on grain and roots will thrive all the better if they can have the water warmed which they drink while the weather is cold. Attention to these matters is vital. It makes the difference frequently between profit and no profit. Steaming food is one of the best ways of preparing it for pigs when the facilities are at hand for preparing it thus.

CURING PORK

"As every thrifty farmer kills and cures his own pork, any way of lessening the labor of smoking it doubtless will be appreciated," writes L. A. Stockwell of Cloverdale, Ind. "I used to spend two weeks trying to smoke my meat by hanging it high in the smokehouse. To keep a smokehouse full of strong smoke was a task that took pretty close attention; yet most of the meat around here is smoked just that way. Riding along the other day I saw

smoke issuing from large cracks in several smokehouses, and that is the trouble. It is difficult to keep them tight enough to hold the smoke. I smoke my meat now in two days. I have a large dry goods box, and hang the joints all around on the inside by means of a hook. Then put an iron soap kettle in, containing a bucket of ashes, and on these drop a few coals. I put on five or six cobs, and cover with an old carpet doubled three or four times. When smoked I pack into a tight sugar barrel, and cover with one thickness of carpet, over which I crowd down a close-fitting barrel cover such as are used over sugar barrels in stores."

SWINE DISEASES

We have already seen that the most profitable way to raise swine is to treat them according to common sense rules of health, and that their well-being does not depend in any measure upon the promiscuous feeding of drugs. Still when ailments and actual diseases do come, it is best to know how to treat them promptly on the farm.

Hog Cholera.—This is the most common of the diseases which affect swine and those who have studied its causes always say that it gets its start in filthy pens and yards, and from drinking impure water. One of the best preventives is "Germol", which is used as a disinfectant. Calomel is also used as a preventive. It acts as a physic to thoroughly purge the bowels, and ten grains are used for a dose. Usually one dose is sufficient.

A daily supply of soft coal, or coal slack, is another means of warding off the disease. The hogs are given free access to it and will not eat more than is good to cleanse their stomach and bowels.

If the animal is actually attacked separate him from the others. Feed the hog oatmeal and bran in a slop cooked with pumpkins or potatoes. Give fifteen drops of tincture of iron, ten drops of tincture of nux vomica, and half an ounce of sulphate of soda night and morning in the slop for ten or fifteen days. If the hog will not eat the slop with this in it, mix it with four ounces of water and give it as a drench.

The following is given by the United States Agricultural Department both as a preventive and a cure: Animals under treatment should be kept dry and warm in clean pens, and the

yards and pens should occasionally be disinfected with a 5 per cent. solution of crude carbolic acid. The remedy is good, moderate in price, obtainable at any drug store, and easily mixed at home. It will do much toward keeping hogs well, and while not infallible, if given to ailing hogs early in the disease, will generally save them.

The remedy: Sodium sulphate, black antimony, sulphur and wood charcoal, one pound each, and two pounds each of sodium hyposulphite, sodium bicarbonate and sodium chloride. Pulverize thoroughly and mix well. The dose is a heaping tablespoonful to each 200 pounds of hog weight, given once a day in a mixture of ground oats and corn moistened with hot water.

Mange and Lice in Swine are usually the result of allowing the pigs to sleep on manure heaps or in old, partially rotten straw piles. Mange is caused by a very small insect that burrows itself under the skin and makes a sore over which a scab forms. To cure, one of the best plans is to wash the animal thoroughly with castile soap and warm water, and then rub with a salve of lard and coal oil in equal parts. This may need repeating in a week or ten days in severe cases. The bedding should be changed, and clean, dry straw be given.

The following formula answers well for killing lice on swine, and it is not costly: Take one-half pound of soft soap, or ordinary soap in case soft soap cannot be obtained. Put this in one gallon of water and boil it gently until the soap is dissolved. Remove from the stove, and add two gallons of coal oil. Then heat until the soapy water and oil are thoroughly diffused, stirring the mixture gently in the meantime while it is heating. Next dilute the same by adding to it eight or ten times its bulk of water. Apply the mixture with a cloth or brush. If applied with a cloth the animal should be brushed at once thereafter, to distribute the application all through the hair. In about ten days make a second application, as then the nits will be hatched. Stray lice may also have come from the bedding. The work will be more thorough if the bedding is well cleaned away before making the application or immediately thereafter, and the floors of the stalls lightly sprayed with the solution. But ordinarily two applications of the mixture will suffice when the application is carefully and thoroughly made.

Scours is a trouble dreaded by all careful pig growers, and not without reason, for it means a stop of growth in the pigs. It is the

result of bad management on the part of the feeder. "Our experience has covered efforts in several directions to prevent it," says John N. Jamison. "We have always fed high, and as we now know we often fed food too rich and fattening. In our early experience we fed heavily on corn, always ear corn, and often meal as part mixture in slop. The scours were as sure to come when the pigs were about three weeks old as the sun was to rise. Then we checked the trouble by cutting down feed, and, instead of slop, fed dry feed, and as an additional remedy, scorched flour. Then the trouble went through the herd, always causing a serious check in growth and thrift, and sometimes loss by death by becoming chronic. This management was not at all satisfactory, and to avoid the trouble we began limiting the ration of the sows when the pigs were about three weeks old. This did better, but was not satisfactory, because they were not making the greatest growth possible.

"We then found that by feeding only middlings and bran as a thick slop, all the sows wanted, the pigs would escape the trouble. But a farmer dislikes to eliminate corn entirely from the ration when the cribs are full to overflow. Consequently we looked a little farther and tried another plan. We fed a part ration of corn, say one-third to one-half. And if the scours made its appearance we fed the sow a little copperas in her slop, a teaspoonful dissolved in water and mixed in the slop at each feed for three or four feeds. This has always checked the trouble and prevents it running through the litter and the herd."

THE DIFFERENT BREEDS

The Poland-China breed originated in the Miama Valley, in Butler and Warren counties, between 1838 and 1840, in the crossing of various families there known as big China, Byfield, Bedford, and Irish Grazier, the offspring being a somewhat coarse black-and-white-spotted swine called by various names, for which a national convention of swine breeders, in 1872, selected that of Poland-China. These were crossed with imported Berkshires to give refinement and propensity to early fattening, and incidentally they acquired much of the Berkshires' conformation, black color, and white markings. The progress made at that season and at that time was in a measure due to the nearness to Cincinnati, which in those days was the greatest

pork-packing point in the world. This popular breed, pre-eminently an American product, probably now numbers as many individuals as all the other breeds combined in the United States.

The Berkshire in its improved form originated, as did the Essex, in England—Italian and Spanish swine being crossed with the coarser native stock—between 1780 and 1800. Although first exported to North America about 1830, it did not obtain general or permanent favor until after 1870. The breed is widely disseminated in America, and justly a favorite, both to breed pure and cross with other breeds.

Chester Whites are the result of mating some large white stock from Bedfordshire, England, with the white hogs common in Chester county, Pennsylvania, about 1818 to 1830; the descendants being swine that were gradually improved by selection, and have maintained their popularity in North America better than any other of their color. In later years hogs of a dark color are most largely reared, because of a belief that they are hardier and less susceptible to affections of the skin incident to sudden changes of temperature and the muddy quarters, severe winds and burning suns to which they are too often continuously subjected.

The Duroc-Jerseys are a breed of large, sandy hogs that are the result of a blending in recent years of families that first attracted attention in New Jersey, where they were known as "Jersey Reds," with the possibly somewhat different type common in Saratoga county, New York, and locally known as "Durocs." The best of them are very easy feeders, full of quality, and in many instances carry extreme weight firmly on bones astonishingly fine.

The Essex are from England, and entirely black. Few of them are raised in the United States, and they are but a very limited factor in the production of this country.

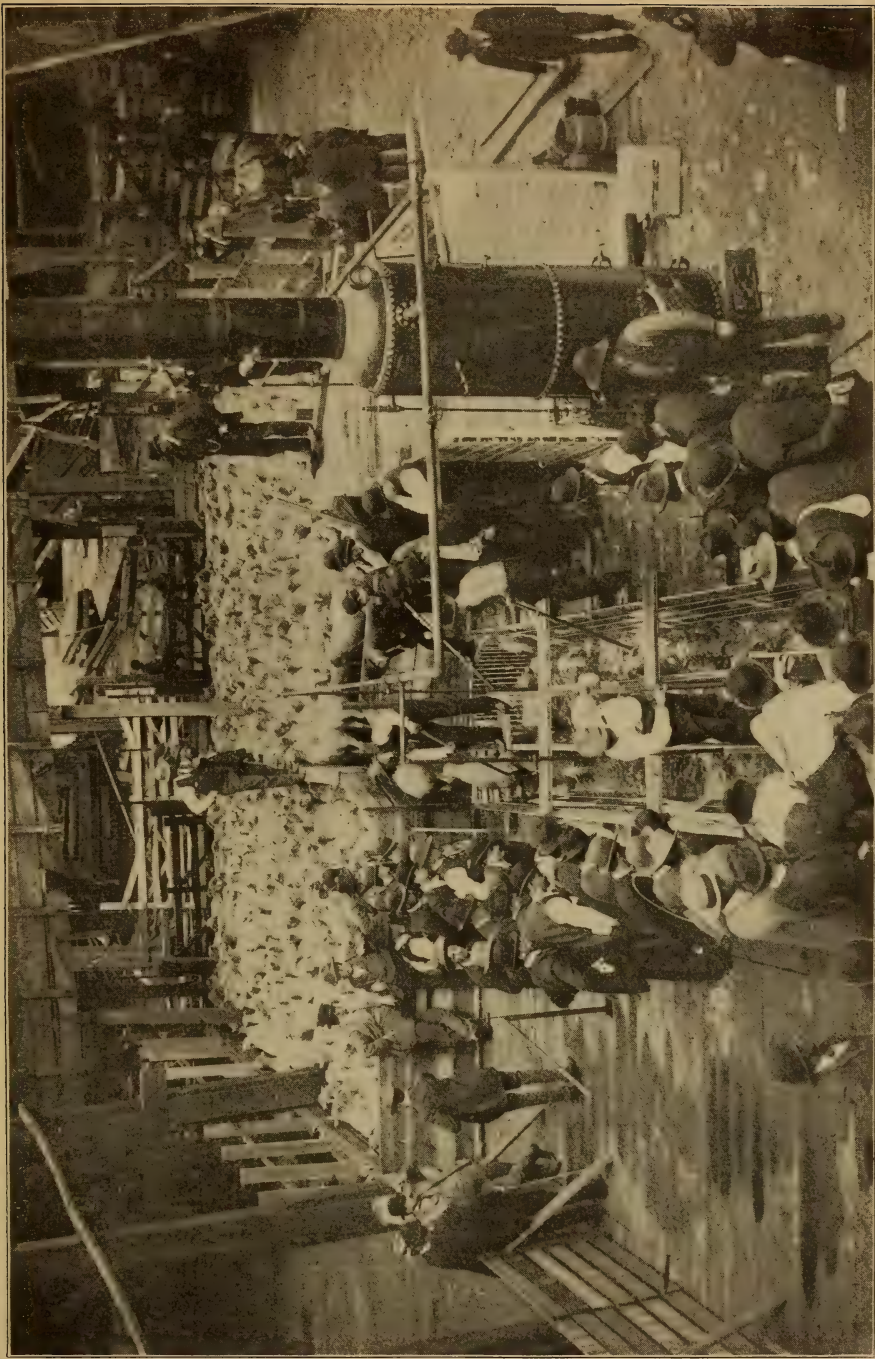
The Yorkshires are entirely British, and in England three families of them are bred, known as the "Large White," "Middle White" and "Small White." The Small Whites so nearly resemble what Americans have known as Suffolks that an expert is unable to tell one from the other. The large Yorkshires or Whites, and the Tamworths are the breeds so much doted on by the English and Canadians as "bacon" hogs, yielding possibly not more lean meat, but less fat than is common to the swine of the corn-growing regions.

They cut no appreciable figure whatever in the pork production of the United States.

Tamworths are a slab-sided, long-legged, lardless, unlovely, red, rusty or sandy, half-civilized sort, from England. Like the Yorkshires their admirers in the United States are at present by no means numerous.

The Victorias, a modern composite sort, were originated in Lake county, Indiana, twenty odd years ago, are white, of medium size, and comparatively unhonored and unsung.

Poland-Chinas, Chester Whites, Duroc-Jerseys, Berkshires, Large Yorkshires or Whites, and Tamworths are properly classed as large breeds; the Essex and Victorias and Middle Yorkshires as medium-sized breeds, and the Yorkshires and Suffolks as small breeds. As a matter of fact, few Americans are engaged in rearing any of the small breeds, preferring those producing animals suitable for slaughter at an early age, yet capable of further growth to any size wished.



Courtesy of the Breeder's Gazette

WASHING SHEEP.

They usually do things on both a large scale and in a rapid way in Chicago. The methods of washing sheep at the Stock Yards are in line with the general rule. The illustration shows the animals being run through the dipping vat into their receiving pens beyond.



SHEARING BY MACHINERY.

In many of the wool-raising sections of the United States shearing by hand is out of date. The above illustration shows how, by a system of flexible shafts, one machine does the work of eight men who use hand shears. The shears, or knives, are run by machinery, and the wool loaded upon a car which is pushed along the track to the end of the room, where the wool is sacked for shipment.

CHAPTER XXII

SHEEP AND GOATS

Proper Country, the First Consideration—Sheep as Weed Exterminators and Fertilizers—Feed—Time for Mating—Controlling Sex—Ewe and Lamb, and Best Care of Them—Mutton and Wool Sheep—Shropshires as Mutton Producers—Wool and Hoofs—Sheep Diseases and Dips—Foot Rot and Worms—How to Mend Broken Bones—A Word for the Goats.

In sheep husbandry the first and main things to be considered as probable elements of success are the condition of the land and the nature of the rainfall. A broken country, high and dry, is far preferable to prairie land, although with proper care as to pasturage and the raising of suitable feed, farmers do make a success of sheep raising even on prairie lands, but they do it at an expenditure of far greater expense and labor than by placing the sheep in their natural country.

The rainfall must be carefully considered, a comparatively dry climate above all else being a necessity for profitable sheep husbandry. Cold rains penetrate the very marrow of the sheep's bones, and unless the animal is carefully housed when such rains prevail loss is sure to follow.

An abundance of pure water should also be available, notwithstanding the old notion, which is somewhat prevalent, that sheep drink little water. It is true they drink lightly each time, but if given free access to water will drink often during the day. No matter how heavy a dew may fall, or how full of juices the grass they eat, a flock of sheep rarely lies down for its midday rest without taking a drink of water.

It is not always possible to give sheep pure and cool water, but the line should be drawn at stagnant pools. If they cannot get water from a stream they should be furnished with their drink from a well.

Half or more of the farms in the country lack in facilities for obtaining water. There is nothing that pays so well as a permanent supply of good water on a farm, and this is especially true of a sheep farm. A well at the place where four fields join will supply all of them and take up practically no space. If a windmill is kept in operation at such a well and provision made for carrying away the waste water a pure supply may be had all the time for all the farm stock.

Horses and cattle are usually well cared for in the matter of water, but the uncomplaining sheep very often goes thirsty and miserable because he does not drink half a barrel of water at a time. Weight for weight, a flock of sheep will probably drink more water than a herd of cattle.

Sheep as Weed Exterminators and Fertilizers.—With favorable surroundings the sheep has several advantages over other live stock as a profitable investment. One of the chief advantages is that he is particularly fond of weeds and saves the farmer much labor and expense in the work of clearing off his land. According to an authority there are nearly 600 varieties of known weeds, of which sheep will eat 515 kinds, while horses, cattle and hogs will eat but a few varieties.

Weeds increase in number and variety as the country grows older. They are found most abundantly in the old countries of Europe. Their steady increase in this country demands that farmers should raise sheep as among other means looking to their extermination. By all means get two or three ewes already bred and give them the run of that foul pasture. Increase the flock by breeding and purchase, if advisable, until the number is sufficient to keep down the weeds on a given area.

The British farmers call the sheep the rent payer, and their agricultural methods and systems are based on the keeping of the sheep. We envy these people their big crops, twice or thrice as large as ours, but we never think that the sheep is one of the chief reasons for this. But there, sheep are kept for the purpose of enriching the land for the growth of these big crops. We don't look at things this way, but we should, and every farmer should make it his business to procure and keep a flock of sheep, if for no other purpose than that of enriching his land and doubling or trebling the product of his fields.

Weeds are not altogether useless from the point of view of a

grazing sheep. We call the dandelion a weed, and a good many men have been known to wish it never would appear, yet a sheep eats it with avidity and looks for more of the same kind. The dandelion is a blood purifier and the sheep eats it with benefit. Sheep are more subject to liver diseases than any other domestic animal, and for such disorders the dandelion is a recognized remedy.

Shepherd's purse, sometimes called lamb's quarter, tastes something like watercress, and is a very common weed in many parts of the country where sheep are not kept. Where sheep can find it they eat it in preference to almost anything else. The bark of elder-bushes, the bitter barks of crab-apple and wild cherry trees, cowslips, plantain, and even some kinds of thistles, are eaten by sheep almost as freely as the best grass. Ragweeds disappear from sheep pastures, and foxtail grass is readily eaten by them when they can get it before it becomes woody. Sheep seem to have been created with an appetite that is all embracing when it comes to vegetation, for they destroy with impartial greediness all sorts of weeds and berry bushes, and are not above doing a very neat job of cleaning the bark off apple trees if given a chance and confined in an orchard where they cannot find the bitter weeds they seem to need to maintain good health.

While no one should allow his farm to become so seeded with weeds that it requires the services of a flock of sheep to clear them out, it will be found much easier to keep a farm clean when there are sheep on it to destroy the weeds as fast as they appear. In a system of rotation of crops sheep could be turned into the fields about every year at some time during the summer. If this is done they will keep the weeds in close subjection without money and without price.

Sheep that graze in woods do some damage, mainly to the young shoots of the trees. They nibble off nearly all the young leaves as they come above the ground. Furthermore, they trample and compact the soil considerably, thus lessening its absorbing capacity. This is a serious consideration in the forest, where the soil is never loosened by cultivation.

Sheep Feed.—Sheep can be turned into corn-fields before the corn is gathered without damage to the corn and with advantage to the sheep. They must have access to rock salt. They eat very much of

the weeds, as stated, but of course prefer grass and grain. To keep sheep in good condition through the winter, an ear of corn with plenty of clover hay is sufficient, and a man of large experience gives each sheep, on pasture in summer and when changing from pasture to clover hay, an ounce of salt every day, and considers it of most vital importance to the welfare of his flocks. When you have a lot of pumpkin seeds which no other live stock will eat, give them to your sheep. A flock of sheep will eat all the seeds from all the pumpkins you will split and place before them. They are fond of the seeds, and they thrive on the diet.

It is now generally admitted that the greatest forage crop for sheep is Dwarf Essex rape. It was introduced from England into the United States several years ago by that tireless agricultural worker, Prof. Thomas Shaw, of the University of Minnesota. Rape belongs to the cabbage family, the leaves having pretty much the same flavor. The seed is sown at the rate of three pounds per acre in drills eighteen inches apart, the land having been prepared practically the same as for corn. Seed may be sown broadcast, but drilling is preferable for the reason that it is advisable to cultivate the plants. This is done with a weeder. Rape may be sown with oats at rate of one to one and one-fourth pounds per acre; it also may be sown from the middle of May to the first of August in corn between rows after late cultivation. After the plants have attained considerable size, and it is desired to utilize the forage, they may be cut with a scythe and fed as needed. Rape is not a horse feed nor should it be fed to milch cows. It is above all things a sheep feed. It yields an enormous crop of forage, some fourteen tons per acre, and will grow successfully in most parts of the Mississippi valley. Seed may be bought for about 15 cents per pound.

"The Time for Mating Sheep depends upon several considerations, the market for lambs and the object for which they are raised," says Prof. Thomas Shaw in the *American Sheep Breeder*. "When the buildings are not warm we should not have the lambs come before the weather is mild and settled in the spring; otherwise we will lose many of them, and the loss of a number of lambs determines the question of profit or loss on the investment. If we have good warm buildings, and we are not too far away from the market, and moreover, if we have a good kind of mutton sheep, we can grow,

early lambs and sell them at good prices. When markets are far away, it will be well as a rule to have the lambs come late.

"When we raise breeding stock for sale, it is to have them come early, for persons who buy lambs for breeding want to have them large. More especially is this true of males. When a man visits a flock to buy ram lambs he invariably picks upon large ones. A ram lamb will answer for breeding to a flock of not more than twenty females—that is to say, if he is an early lamb. If he is not, he should not be mated with so many ewes. To mate a young lamb with a large number of ewes injures his growth, and it might also injure his breeding powers. But all things considered, it would be better to buy a shearing—that is, a ram that has only been once shorn. Such a ram is in full vigor, and should, therefore, get good, strong lambs.

"We get the best lambs from rams when one, two and three years old, because they are then in the best vigor. At these ages they may be mated with 100 females if they are well fed. They may be used as old as five, six or seven years, when they are really good ones, but we may expect better lambs from them when they are younger. Ewes should not be bred until after they have been shorn once. If they are bred as lambs they will not grow so large themselves, nor will they raise large lambs, so that when anyone practices breeding his females as lambs he certainly does what will injure the size of the sheep. When a young ewe has to nourish a lamb and make growth herself, the lamb is a drain upon her system and she cannot nourish it so well either before or after birth, because she has to do something at building up her own frame.

"The best lambs may be expected from ewes two, three and four years old at the time they drop their lambs, but sometimes it may pay to keep them longer. It will be necessary to change the rams every two years where the flock is not large, for if this is not done, then the ram would be bred to females of its own offspring, and that would be termed in-and-inbreeding, which, if practiced, would lead to harmful results. The ewes should be in good condition at the mating season. If they are poor they will not likely breed until they put on a good deal of flesh. This may prolong the lambing season so that it will extend over many weeks, which is not desirable."

Controlling Sex.—Experiments in controlling the sex among sheep have reached such a stage in France that the experimenters

have reached the conclusion that this can be done to an appreciable extent.

The rule seems to be that to produce the most males in a flock the ewes must be bred to rams over four years old, the average of observance in such cases being 55 males and 35 females. When yearling rams were used with ewes ranging from two to four years, the average was but 35 males to 76 females. Yearling rams, it has also been found in experiments carried on in this country, but without the careful observation exercised in France, nearly always produce an excess of females, and the older rams, particularly those above four years, an excess of males.

EWES AND LAMBS

The spring is the most favorable season for the arrival of lambs and the majority of them commence to make their appearance by the beginning of March. A few safe general rules may be laid down for the care of both ewes and lambs.

Keep the ewes away from the other stock.

See to it that the lambs get plenty of sunshine, that giver and preserver of life.

Keep the young lambs off the snow. When they are a few weeks old they will be able to travel about with their dams without danger of injury by snow.

Provide comfortable quarters for the ewes about to lamb. Keep the cold rains off and give them as much feed as they want.

Put ewes with newly born lambs in separate pens for a few days. Thus will the lambs become acquainted with their respective mothers.

When the lamb arrives, see to it that it gets a fill of milk before you leave it.

If the ewe doesn't present twins, don't worry; one good lamb is worth two runts.

Make a visit to the lambing quarters the last thing at night to see how things are going. Do the same the first thing in the morning.

Keep plenty of sweet hay where the ewes can get to it handily.

The lambs will commence eating it when they are about three weeks old.

When the lamb is found, if he be numb and inactive, take him to

the house and give him careful attention. Wrap him in a piece of flannel and warm him gently.

Special attention should be given ewes and lambs, when the latter arrive in winter. In this case common sense, of course, would tell the breeder that warm shelter and bedding, first of all, must be provided. The fact that the dams have long wool and do not suffer from the cold is no reason that the tender lambs will be unharmed thereby. If the lambs are chilled through and through at birth and not given personal attention very soon afterward, the probability is they will die.

The ewe about to bring lambs should be put in a yard or pen in which there is a shed or comfortable house of some kind for her protection from cold. An abundance of straw should be given for bedding, and the feed regulated to suit her needs. Sheaf oats, which are about the best balanced ration for any kind of stock, should be fed liberally, and fresh water, not chilled, though, should be given her twice a day.

Some lambs when born are very strong and are able soon to get up and find where their living comes from, while others are weak and helpless for several days after birth. The latter kind should have the care and attention of the stockman. If the breed is worth breeding, then the lambs are worth giving the best care. After they are started and get strength, they are generally able to take care of themselves with proper feed.

The ewe mothering two lambs needs extra feed and care, as she has to eat enough to sustain three lives. And as the lambs grow older, the demand on her system increases. Food should be given accordingly. Clover and timothy hay, shelled corn and oats, will supply the material of which milk is made and flesh formed. The corn furnishes fat—heat—while the hay and oats produce muscle and give strength to the bones. Feed generously.

Never permit the ewes and lambs to run with larger stock—horses, mules and cattle—as when the horses, especially, get to romping and prancing, they are likely to paw a lamb or two into the earth, and in many cases break down a ewe in the back. Another thing: Keep ewes about to lamb away from the hogs—old sows are prone to make a meal of a fresh-born lamb if given access to it.

Do not feed the breeding ewes corn for a month before lambing

time. Give them a moderate amount of clover hay, some bright straw to nibble at, and a mixture of two-thirds wheat bran to one-third of ground oats as a grain ration, or corn and oats, unground. Give plenty of water and an opportunity to run in the sunshine on fair days, but do not make breeding ewes go out and in through a narrow door, as they are almost certain to crowd each other, and this crowding frequently results in abortion or injuries that end in the death of the animal. Oil meal should not be fed to breeding ewes except in very small quantities, and it is not necessary at all where clover hay is available. If sugar beets, mangels or turnips are to be had they are among the best things for breeding ewes that can be found.

The lamb should be supplied with a grain ration separate from that of the ewes. This can be easily arranged by constructing a little pen sufficiently large for the lambs to enter and eat, but not large enough for ewes to crowd in or reach the grain. This little pen can be made in one corner of the sheep-shed, the size depending entirely on the number of lambs that are to be fed. In making it some small gates can be temporarily placed, being removed when there is no further need of the pen. A little shelf should be fixed in the pen, on which bran can be placed for the lambs to go to as they are inclined.

MEAT, WOOL AND HOOFS

This classification may seem strange to some farmers; and it might be strained, were it not for the fact that trimming and careful attention, in all respects, to the hoofs of the sheep are especially necessary to the health of the best wool-bearing varieties. Shropshires, which are the typical mutton sheep, need comparatively little attention in this regard. Facts are presented below of value to the breeders of mutton sheep and those who raise their stock for the production of wool.

Sheep as Mutton Producers—Shropshires.—In his address before the Iowa Agricultural Board, Prof. John A. Craig pointed out the good and bad qualities in sheep from the butcher's point of view. His remarks were to the effect that to form a basis for estimating the good and bad qualities of sheep, it is best to first consider the carcass and that from the butcher's point of view. The different parts of the

lamb show a wide variation. The neck has a value of only one cent per pound, the shoulder two cents and the shanks the same. The rib running from the point of the shoulder to the loin has a value of nine cents per pound, and the same is true of the loin, while the leg of mutton or the "giggots," as they are sometimes called, have the highest value per pound of any other part, as they are quoted at ten cents. The breast, however, has the low value of two cents per pound in Chicago markets. From these facts it will be seen that the back and the development of the leg are the most important points to criticise in the form of the fat lamb.

In what has preceded, attention has been given particularly to the perfections, but there are many defects worthy of being mentioned that are characteristic of fat lambs. Very often the top of the shoulder is not covered sufficiently with flesh, letting the top of the blade come out too sharp and bare. This part, for at least the length of the hand, should be flat and well covered with flesh in a fattened sheep. The ribs should spring out from the body and all be well covered with firm flesh. The backbone should not stand prominent at any point, as it is sometimes at various points along the back. Frequently it is grooved, on account of the development of flesh along it, but it is better to be perfectly flat and smooth. The loin in some lambs rises, and this is specially a bad defect when it is also bare of flesh. The hind quarters frequently shrink away towards the tail-head and down the thigh. This should not be, as the hind quarter should continue straight and full. From the hip to hock the fat sheep should be especially strong. Not only should the leg be full and plump with muscle on the outside, but between the legs in the twist the flesh should run well towards the hock and compel the hind legs to stand wide apart. Badly set hocks often interfere with the development of the hind quarter, and they also are as bad an eye-sore as broken down pasterns.

After the form of the sheep has been carefully gone over, the quality should be noted. The cleanliness of the bone, the apparent strength of it, and the nature of the hair which covers the face and legs should be noted. These are important features in either breeding sheep or fat sheep. It is, perhaps, most valuable from the butcher's standpoint, because the waste is less from a sheep of good quality than it is from one that is inferior, but sheep of the

best quality will not dress much over fifty per cent. of their live weight.

Shropshires have long been known as the "gentleman's sheep" because of their neat and compact bodies. As mutton producers they have no superiors, and the lambs from Shropshire ewes grow to weigh forty or fifty pounds at a very early age.

"In a flock we know of," said a writer in the *Farmer's Voice*, "there is a ewe with twin lambs, either of which will weigh forty pounds, and this ewe has furnished milk for both the lambs and has kept mutton fat all the time on good hay, corn-stover and a little grain, chop and cottonseed meal. There are something over fifty ewes in the flock and they have nearly fifty lambs. Not one of the ewes failed to own her lamb, and all but one of them proved good milkers. The wool from this flock will pay the cost of keeping for a year, and the lambs can be sold any day to a local butcher for \$4 each. The ewes are worth probably \$7 each and are the most profitable stock kept on the farm.

"Shropshires have been so carefully bred and so skillfully selected that they breed very true to the required type, and in a flock of pure-bred Shropshires there will be very few culls. No breed of sheep produces more choice mutton in proportion to live weight than these, and the farmer who chooses them as his breed will not make a mistake."

Wool and Hoofs.—"The first thing to be considered is how to put up the wool so as to give the buyer a good impression when he first looks at it. There are a number of ways of tying the fleece. Some prefer using a box into which the fleece is pressed and tightly tied, so that when taken out it retains the shape of the box," says a wool merchant. "The fleece that is most attractive and seems to get the most comments of approval from buyers in general is the one that is simply folded in as loosely as possible to have it hold its shape, using as little twine as will accomplish the object.

"Where this is well done, light, bulky-looking fleece is made, which in the market is more appreciated than the more symmetrical fleece that comes from the box, the criticism on the latter being that pressing it so tightly gives it a soggy and heavy appearance that repels the buyer. The twine used should be the regular wool twine, and under no circumstances should sisal twine be used. By sisal

twine I mean such as is commonly known as hide rope and some kinds of binding twine made from the sisal fibre. The reason why it should not be used is that its fibres intermingle with the wool and cannot be got out in process of manufacture, and have to be picked out of the goods in the shape of specks.

"Now as to the condition of the fleece before it is tied. It should be free from all tags and heavy skirt locks, and as free as possible of all seeds, chaff or straw as well as sand burs. Seeds and chaff are very hard to get out of wool, and where the fleece is bad with them the value is hurt more than burs affect its value."

As a wool sheep there is little dispute, on the whole, as to the superiority of the Merino over all other varieties. Some breeders prefer a cross between the Cotswold and the Merino, as better adapted to withstand the severity of the Northern climate, and go so far as to name them Cotswold Merinos, or American Cotswolds.

Sheep's hoofs are more or less inclined to overgrow their natural length. This seems more particularly true of the fine wool breeds than of the larger English sheep, although it is not uncommon among the latter. The feet of any sheep should be watched carefully that the hoofs be kept within reasonable limits. Overgrowths are often extreme, though never in a flock cared for by a good sheepman. As a rule, if a sheep's hoofs are trimmed once a year at shearing that will be all the attention they will need, at least until they go into winter quarters. Once a year is sufficient for some sheep, while there is occasionally one that never needs any trimming.

Overgrown hoofs can be readily trimmed with mallet and chisel, but the most convenient thing is a pair of regular trimmers. There are one or two makes on the market that are very good for the purpose. A pair of common hand pruning shears will do the business satisfactorily. The two kinds are made on the same principle, with the possibility of better workmanship and cutting features in favor of the pruners.

Hoofs should be trimmed, not only for the convenience of the sheep in traveling, but to insure the health of the hoofs. Hoof-growth is stimulated by low ground, and the moisture that forces the hoofs has a striking tendency to promote hoof disorders.

Irregular shaped hoofs have a tendency to collect filth and

retain it indefinitely. A sheep that is at all inclined towards foot rot will have the trouble greatly aggravated by this collection.

SHEEP DISEASES

Sheep are subject to all the diseases which afflict other live stock, such as dysentery, colic, bronchitis, catarrh, and lung fever. They are particularly addicted to foot rot and diseases of the skin caused by tick and lice. The ailments common to all animals may be treated with the simple remedies already given, but those diseases of the hoots and skin which have such an effect upon the wool-producing capacity of the sheep require special mention.

Dips and Skin Diseases.—In the treatment of skin diseases, the great study has been to provide some dip which will kill the parasites without injuring the wool.

It has been only a few years since dipping sheep became general all over the country, because it has not been long that dips not detrimental to both the sheep and their wool have been obtainable. A few years ago no flockmaster thought of dipping his sheep unless they were afflicted with scab, because it was known the dips in use would injure the wool and interfere with the thrift of the animal, and dipping was resorted to only because it was the lesser of two evils.

The old-time remedy for scab was a dip composed of lime and sulphur, a most diabolic compound in which to dip any living animal, and one that should never be used except when it is impossible to obtain anything else, and then only as a last resort to save the life of the sheep.

No one nowadays ever would think of dipping a sheep in a tub of whitewash, but this was what was done when the old dip was used. For one thing it would be a clear case of cruelty to animals, and for another it would be applying a remedy about as bad as the worst disease imaginable. Lime is of such a nature that it takes the life out of wool, making it harsh and brittle, and interfering with both growth and quality.

There is no excuse in these days for resorting to such a compound for the purpose of curing scab or destroying ticks. There are on the market dips that not only cure skin diseases of sheep and kill all the parasites that afflict them, but actually improve the

quality of the wool and so promote its growth that it is a matter of economy to use them, as they increase the profits of the wool grower more than the cost for material and labor.

The following remedies are said to be good: Carbolic Acid Dip: soap, one pound; crude carbolic acid, sixteen ounces; water, fifty gallons. Dissolve the soap in a gallon or more of boiling water, add the acid and stir thoroughly. Keep the mixture well thinned, and do not let it get into the mouth, nostrils or eyes of the sheep. Hold each sheep in the bath not less than half a minute.

Kerosene Emulsion Dip: fresh skimmed milk, one gallon; kerosene, two gallons. Churn together till emulsified, or mix and put into the mixture a force pump and direct the stream from the pump back into the mixture. The emulsification will take place more rapidly if the milk be added while boiling hot. Use one gallon of this emulsion to each ten gallons of water required.

Simple tobacco is recommended by many. After the sheep have been sheared two weeks boil a refuse quantity of tobacco leaves, or five or six pounds of plug tobacco. Put the liquid into a trough and dip the sheep. The wash will be sufficient for about one hundred.

Foot Rot.—Damp, low ground is productive of foot rot among sheep, and once a sheep has contracted the disease it is easily taken by the flock, and is so contagious that if a flock in good health be put in a damp, muddy field, where sheep with the disease have been kept, every sheep in the healthy flock will in a short time become infected. To cure the disease put them in a dry, high pasture or a dry pen, and apply remedies known to cure the affected parts.

A simple ointment for both sheep and cattle consists of four ounces of melted lard and Venice turpentine, with one ounce of blue vitriol.

When any cracks appear in the hoof, attended with heat, apply oil of turpentine and common brandy. If the disease has been long seated, after cleaning the hoof and paring away the diseased parts apply such caustics as sulphuric acid or nitrate of mercury.

After washing and paring the hoofs others recommend that the sheep stand in quick lime, strewn on the floor of the pen to a depth of three or four inches.

For Worms.—The most effective remedy for round worms in sheep—those that are found in the dung—is to give one-half ounce

fluid extract of spigelia at a dose in a little milk, on an empty stomach; follow this in ten hours by giving four ounces epsom salts and a dessertspoonful of ground ginger dissolved in water, at one dose.

Another good remedy is one-half ounce of turpentine in four ounces of raw linseed oil, at one dose.

To Mend Broken Bones.—Sheep have weak bones, and if one of the legs is caught between bars partly let down, the bone may be snapped like a dry twig. Then the shepherd who does not understand his business fully thinks he has a sheep lost and knocks it on the head. This is waste of the animal, whose bones will mend readily by simple treatment. Take some thick straw-board or wrapping paper, steeped in a thin mixture of plaster and water. Set the broken bone in its natural position and wrap a few strips of this paper around the leg. Then take a long bandage of cotton cloth and dip this in the plaster, wrapping this over the paper. It will set stiff and hard in a very short time, and by this support the bone will unite in about ten days.

A WORD FOR THE GOATS

"In my correspondence with parties inquiring about the Angora goats," writes a specialist on the subject, "it has struck me that few realize how little these animals interfere with the grazing of other stock wherever there is browsing in the pasture.

"If confined exclusively on grass and clover they will thrive on this class of feed; indeed they will grow fatter and lazier than where they have bushes, briars and weeds, though they infinitely prefer the latter class of herbage if they have their choice about it, and it is for this reason that they can be turned to so profitable an account in pastures where portions of the land are of a character that is of but little use for other stock, and it is in this that one of the chief elements of profit in the Angora goat comes in. They will turn into a mercantile product much that would otherwise be absolutely wasted, and in addition to this will enrich the more open grass lands with their droppings.

"I am not discussing here the feature of turning lands heavily coated with underbrush into blue grass pastures, which is what they are often kept for in many parts of Iowa and neighboring states. Their mohair (or goats' wool) has a regular market value, and there

are several mills in the United States using the product exclusively in the manufacture of plushes and other mohair goods.

"The meat of the Angora goat is excellent and of much strengthening value for weak children and invalids, and this is also true of the milk, and both are often prescribed by physicians. The skins when taken off during winter, when the hair is long, make very handsome rugs, when properly dressed, and are much used for trimming capes worn by ladies and children."

There are other points than those mentioned above in favor of the Angora goat. Not only are the animals prolific land fertilizers, but they enrich the highest and poorest portions of the farm, while horses and cattle fertilize the richest portions, where the grass grows. In summer, when browsing, their flesh has a very delightful flavor, between venison and mutton, which gives the name "venison" to the meat. In winter, when fattened on grain, it loses that flavor, but acquires that of mutton. It has none of that "woolly" taste of mutton which is so objectionable to many people. Thousands of goats are killed in our packing houses and sold as "well-dressed mutton." Only an expert can tell the difference, as their carcasses appear the same when hanging in the market. They will dress out a larger per cent. of meat than sheep, and their meat is more juicy than mutton and has a finer flavor.

CHAPTER XXIII

HOUSEHOLD PETS

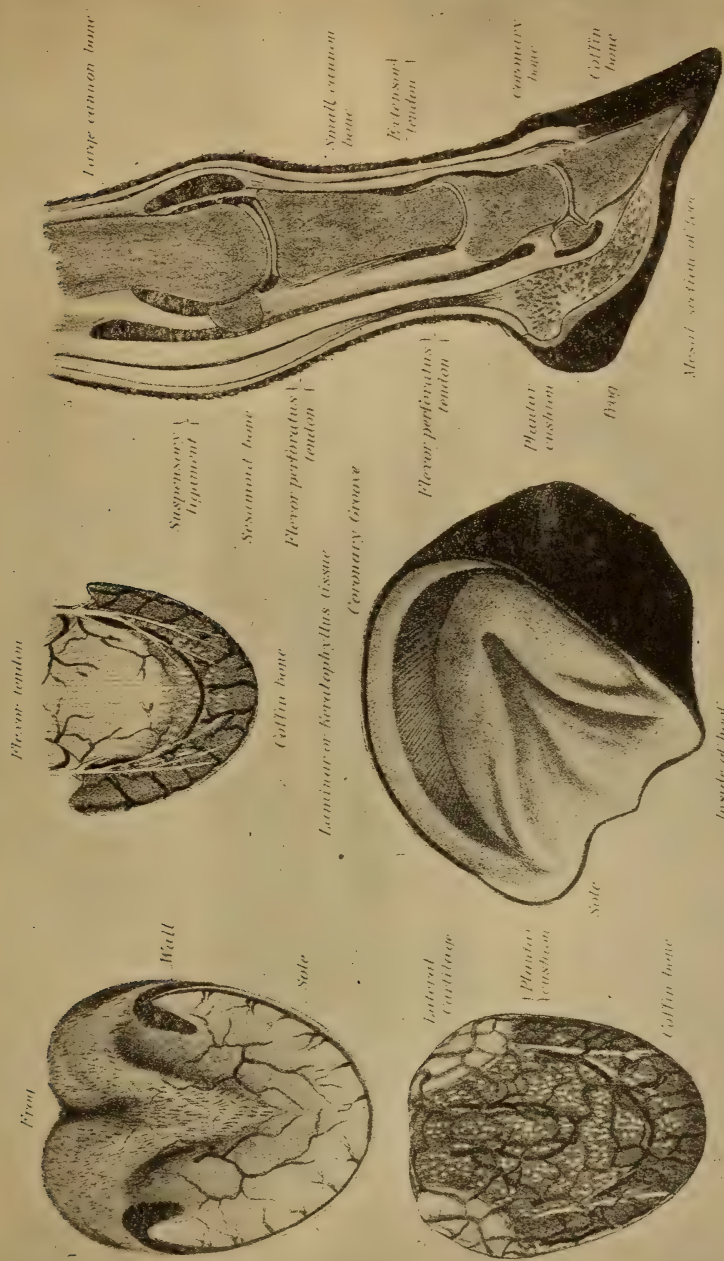
Birds—Their Chief Dangers: Improper Food, or Feeding, and Exposure to Sudden Draughts—How to Treat Them for Colds, Loss of Voice, Diarrhea and Costiveness—Moulting, Care of Feet, Etc.—Obstruction of Oil Gland—Canary Birds—Mating and Care of the Young—Mocking Birds and Parrots—Bird Foods for All—Red Bird and Robin—Dogs and Cats—How to Banish Fleas—The Administering of Medicines—The Treatment and Habits of—Rabbits, Mice, Rats, Etc.—Gold and Silver Fish.

There are few households in which at least some member of the family is not fond of pets and would not like to have at hand well-tried rules for their care in health and disease. Each domesticated animal has ailments specially his own, to which we shall give the most attention, as well as many to which all live stock are subject and to which the same general treatment applies.

Among the favorite household pets birds and dogs probably take the lead, with cats a close second. Fishes also come in for a large share of feminine attention. Rabbits, white mice, and guinea pigs seem to be going out of favor. The bulk of this chapter will, therefore, be devoted to those household pets—birds, dogs and cats—which, although natural enemies to each other, have been adopted by men and women for the pleasure they give, either by exhibitions of intelligence and affection or by melody of song and beauty of coloring.

BIRDS

The closest attention to the needs of the feathered tribe is required to keep them in such bodily condition, while in confinement, that their coats may show a healthful gloss and freshness of color, and their songs be free and sweet. The two chief concerns should be constant care in their diet and the guarding against sudden draughts

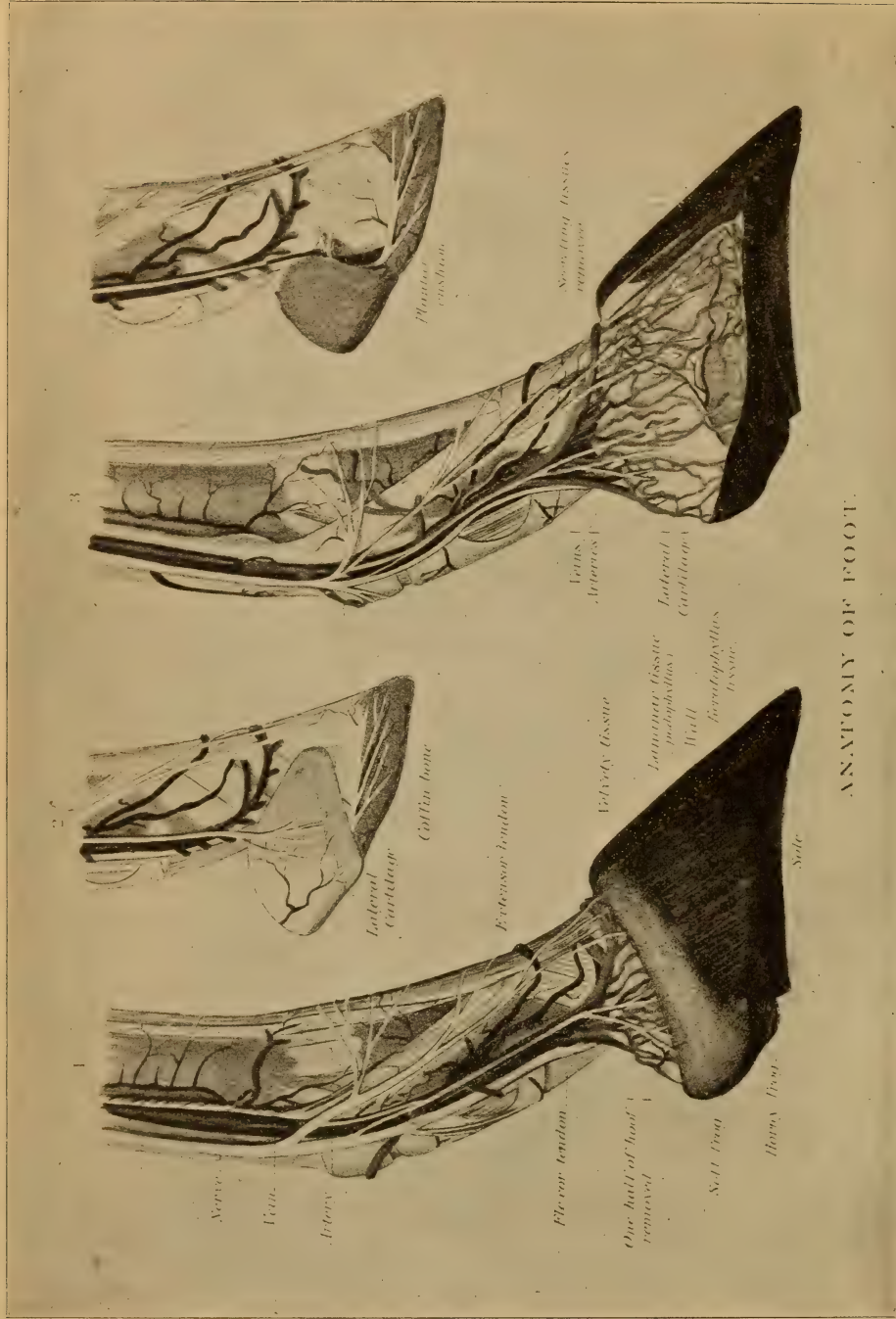


ANATOMY OF FOOT.

From Special Report on Diseases of the Horse—United States Department of Agriculture

ANATOMY OF FOOT.

The arrangement of the powerful tendons, ligaments and bones in the ankles of the horse explains the prompt and wonderful force which he is able to exert in travel. The above illustration also places before the reader the details as to the structure of the hoof and frog and how he can so superbly obtain a hold upon the earth whether moving upon level or hilly ground.



From Special Report on Diseases of the Horse—United States Department of Agriculture

ANATOMY OF FOOT.

The plate above shows not only the anatomy of the horse's leg and foot as to nerve, vein, artery, muscle, tendon and cartilage, but the way in which the foot is protected and cushioned. By studying the skeleton we note how a shock to the brain is modified by the angles at which the bones are set. An examination of the construction of the leg and foot indicates how this is reduced to a minimum.

or changes of temperature. Birds are especially subject to lice and colds, and are, as a rule, more injured by overfeeding than underfeeding. By taking a severe cold they sometimes lose their voices entirely, as do people, and whatever affects their general health has a bad effect on their plumage.

When birds are ailing a safe general rule to follow is to keep them as quiet as possible, and for this purpose to throw a thin cloth or newspaper over the cage. If they show symptoms of a bad cold add to their regular food a paste made of hard boiled eggs, cornmeal and grated apples, plentifully spiced with cayenne pepper. If they lose their voice it may often be brought back by dissolving rock candy in their drinking water. Diarrhea may be cured by placing a rusty nail in the drinking water, and costiveness by giving them green fruit. When they are moulting give them warm, nourishing food and plenty of sunshine, being careful to keep them out of draughts. The feet of birds are well adapted to carry around filth and to breed disease generally, and too much attention cannot be given to them. They should be cleaned and bathed often in warm water, and if they become warty or sore, grease and fresh cream should also be applied. Keep plenty of clean sand in the cage, and upon the first appearance of lice do not for a minute neglect to use your insect powder.

A very important consideration in the proper care of the bird, as well as toward keeping the feathers in good order, is that his plumage should receive unobstructed its natural supply of oil. This supply is derived from a gland above the tail, which sometimes becomes obstructed with oil. The bird then becomes puffed up, uneasy and unless relieved sickly. The course to be pursued is to run the point of a sharp needle into the lump on the back of the bird, which marks the presence of the gland; repeat this several times and grease the points of perforation with a little butter to prevent scabbing.

Canary Birds.—As a rule birds with long, straight and tapering bodies make the best singers. The German varieties are generally preferred, because of the study which for centuries the people of that country have made in selection and breeding. Of the German canaries the St. Andresburg is one of the best.

But the breeder of canary birds must neither rely upon appearance nor reputation alone. Never buy a bird until you have heard

him sing. The best time to mate is in the winter, when the average temperature of the modern house is above seventy degrees. Some who carry sentiment even into the raising of canaries prefer St. Valentine's day above all other times for the caging of the pretty couple. The two generally fight for a few days, then "make up," and soon after commence to carry around any little pieces of paper or other material which they can find and which they evidently believe can be used in nest-making. This is the time to place a nest for them in the cage and then leave them alone except to keep the cage supplied with plenty of fine gravel, or sand, the inevitable cuttlefish bone and the proper food. For canary birds which are breeding are recommended as a suitable diet canary seed, bread, the yolk of boiled eggs and a little sugar, with lettuce or other greens in moderation.

Usually the female will lay her first egg in eight days from the time of mating and in two weeks will hatch out her first bird. Four broods in a season may be raised, although it is best to limit the number to two or three. If one bird is raised from four eggs it may be considered a fair proportion.

There are various reasons why the eggs may never become birds. The hen may desert the eggs, in which case they are probably bad, and should be thrown away. She may eat her eggs; as she is then probably underfed, the remedy is to feed her well early in the morning or late at night. If the hen neglects her young, the same cause also is likely to be at the bottom of her treatment, and she should be given plenty of delicate food.

"As soon as the young are hatched," says an authority, "place beside the usual feeding trough a cup containing finely grated hard boiled egg and stale bread rubbed fine and soaked in milk, also one containing crushed rapeseed boiled and afterward washed with fresh water. The young may be placed in separate cages in about four weeks." Then their instruction in singing should commence, which consists, as far as the man or woman is concerned, in hanging the young bird near some first-class singer.

In order to distinguish the male, or the singer, from the female it may be stated that the body of the male is usually larger, longer and more tapering. The male generally has more yellow above the bill, under the throat and in the pinions of the wings. The throat of the male vibrates while singing; that of the hen never does.

A few good suggestions are now made in regard to mating for color and singing qualities, as follows:

"If you desire to get pied birds, which are generally strong, hearty birds, get a rich, yellow-splashed male, and mate it with a yellow hen; if it is desired to get cinnamon-colored birds, a dark-green male bird and a very light or white hen will often produce them; and a very light cinnamon bird mated with a green one will often produce a dove or fawn-colored variety, which are very handsome birds. Most authorities agree that the mating of topknot birds will produce bare polls, but this is contradicted by many who have raised beautiful crested birds from a male and female, having only moderately good topknots.

"A great improvement can be made in the form of the bird most often met with, and known as the German bird, by crossing it with the part Belgian or long-breed variety; and when the male bird is a good songster the offspring will be the same, if not better songsters than their parent bird. The Belgian variety is usually not an extra good songster, and it is a delicate species in this climate."

The general instructions given in regard to the treatment of bird diseases must be applied particularly to canaries. This variety is very prone to ailments caused by improper food, or too much of it. The belly swells and, on blowing up the feathers, is seen to be covered with distended blood vessels. Scabs sometimes appear upon the head. The remedy is to take away the rich canary seed and supply grit instead, adding a little saffron to the water and rubbing almond oil on the affected parts. For excessive perspiration, caused by warm weather or sitting too closely on the nest, a wash of salt and water is good. Sometimes the bird is egg-bound from cold; give her a little moist sugar, or a drop of castor oil and anoint her abdomen with warm sweet oil. When a bird continues sickly without apparent cause, give a little powdered charcoal mixed with bread and egg.

Beside the standard canary seed (composed of canary, hemp, millet and rape), cuttle bone, hard-boiled egg, bread, apple, lettuce, etc., there are many foods prepared in the form of powders or pastes, which are especially suitable to the canary bird. One of these is the so-called German Paste which is made of blanched sweet almonds, one pound; pea meal, two pounds; butter, three

ounces; saffron, a few grains; honey, a sufficient quantity. The paste is granulated by pressing it through a colander. Some add the yolks of two eggs.

Another canary bird food consists of corn-meal, eight ounces; blanched sweet almonds, four ounces; fresh butter, one ounce; powdered sugar, one ounce; saffron, five grains, and one or two eggs. Pass the egg through a fine grater and add to the other ingredients. Beat to a smooth paste with cold water, and granulate the mass by passing through a coarse grater, then expose the product to the air in a warm place until quite hard and dry.

Mocking Birds and Parrots.—Although almost entirely imitative, in which respect they resemble the lower races of mankind, mocking birds and parrots are among the most intelligent of the domesticated varieties, causing much amusement and not a little astonishment by their performances. But in order to get the most out of them, they must be well cared for.

It takes three years for the mocking bird to mature. "The best time to buy," says a writer on the subject, "is in November, for then the bird will be through with its first moulting, which is most dangerous to all young birds, and more particularly to mocking and soft-feed birds in this climate. Before you get your bird, get a large cage and have it in readiness for him, and let it be such a cage as you will desire to keep him in for years; for of all birds the mocking bird dislikes to have any change made in his habitation."

The food of the mocking bird must be sweet; for if at all sour it will give him the diarrhea, a common and often fatal disease to him. Pure mocking bird food should every morning be mixed with an equal quantity of finely grated raw carrot, or finely mashed boiled potato—perhaps alternating the carrot and the potato feed, with a portion of a hard boiled egg for variety. A pepper pod should be hung in the cage and a few insects or meal worms given daily. Gravel and water, of course, are necessary. With proper care a mocking bird can be kept in song for ten years and he sometimes lives twice that period.

The following is offered as a good food for mocking birds: Mix together two quarts of corn-meal, two parts pea-meal, and one part moss-meal; add a little melted lard, but not sufficient to make the mixture too greasy, and sweeten with molasses. Fry in a frying-pan

for one-half hour, stirring constantly, and taking care not to let it burn; this makes it keep well. Put it in a covered jar. The moss-meal is prepared by drying and grinding the imported German moss-seed.

Another recipe for both mocking birds and nightingales is: Eight ounces of broken crackers, nine ounces of corn, two ounces of rice, one ounce of hemp seed and ten grains of capsicum. All the ingredients are mixed and reduced to coarse powder.

The most beautiful of the parrots, of which there is a great variety, are not the talkers. The gray parrot is one of the best natured, hardy and talkable of them all. Equally as hardy and more cleanly is the double yellow-head, the Cuban parrot being an especial favorite, on account of its aptness to learn.

It is well known that the quickest way to teach a parrot to speak is to place him near a talking bird. The parrots should be placed near enough to hear but not see each other, and the one will soon imitate the other. Other directions to be followed: "A good way is to speak to the bird at night; just when his cage has been covered over (which must always be done with a woolen rug in winter) repeat over several times in the same tone, the sentence you wish him to learn. He may not appear to notice at first, but some day, quite unexpectedly, he will repeat the sentence exactly in the same tone that he has heard it. He should at once be rewarded with a bit of sugar, or fruit, or any little dainty that he is fond of. Parrots are very quick at understanding that rewards are given for obedience.

"Never allow a parrot to be startled or teased, or permit it to be fed indiscriminately by visitors. Keep the cage extremely clean; let it be wiped out and fresh sand given every day. Some birds drink very little, but they should always be able to get a drink of fresh water if they wish. It is also a good plan to let a small quantity of canary seed remain in the seed can; it is possible that the morning bread and milk may be forgotten and the seed will thus prevent the bird being starved."

Fruits, seeds, roots and nuts are the natural and most wholesome food for parrots. Some give them a little meat, although it is considered dangerous by others, on the ground that lean meat heats the blood and irritates the skin, while fat meat is productive of diarrhea.

The Red Bird, Robin, etc.—The red bird is one of the most beautiful,

hardy and hearty of his kind. He is a loud and constant singer. Suitable foods for him are wild rice, wheat, canary, oats, sunflower and a little hemp; crackers soaked in hot milk; a little red pepper; worms and insects daily; finely scraped lean meat; occasionally a sweet apple core; with cuttle fish, red pepper pods, gravel and water always near. A specially prepared food for red birds consists of eight ounces of sunflower seed, ten ounces of canary seed, eight ounces of cracked wheat and six ounces of unshelled rice. All mixed and ground to a coarse powder.

No one need be introduced to the robin—strong and cheerful. His song, however, even when the bird is taught young, never reaches much beyond a pleasant whistle. His food and general treatment should be similar to those of the red and mocking birds.

Beside the varieties mentioned, American households have adopted, to some extent, the bobolink, goldfinch, brown thrush and nightingale. The small boy also has his pigeon—but its care has already been discussed, as it is now not so much a household pet as a profitable source of revenue to business men.

DOGS AND CATS

It is impossible here to write from the standpoint of the dog or the cat fancier. For the men who indulge in fancy breeds of dogs or the ladies who are absorbed in blooded cats, books upon books are now written. The aim of this section is simply to present a few practical suggestions as to the best way of caring for the average dog and cat of the household.

As a rule, a puppy under six months old should never have meat given to it, and no raw meat, until it has reached the age of one year.

Very young puppies should be fed upon bread and milk alone; when older, soup and bread added. A warm, dry bed is as necessary to the health of a puppy as of a child.

It is generally known that the age of a dog may be told by his teeth; but exactly how this is done is not often known. The following, written by "one who knows," is explanatory: "A dog, as well as a horse, has a very visible mark in his teeth, which does not disappear totally until he is very near or fully six years old. Look to the four front teeth, both in the upper and lower jaw, but particularly to the teeth in the upper jaw; for in those four teeth the mark remains the

longest. At twelve months old you will observe every one of the four front teeth, both in the upper and under jaw, jagged and uneven. Between three and four years old these marks will be fully half worn down, and when they are quite flat and smooth you may conclude that the dog is at least six years old."

You may have a white dog of which you are very proud, and wish to know of a simple way to keep him clean. Here it is: Make a good lather of white soap with a little spirits of turpentine; wash the dog as quickly as possible in this while it is warm, but not hot, taking care not to let the soapy lather get into its eyes. Have a tub of clean tepid water in which a little blue has been dissolved; when the coat is clean dip the dog into the blue-water and rinse out the soap. Then rub it well in a clean sheet before a fire; if the hair is long comb it out and brush it as it dries. The turpentine will kill fleas unless the dog is infested with them.

If this is not enough, the oil of pennyroyal will certainly drive the fleas away; but a cheaper method, where the herb flourishes, is to dip either dogs or cats into a decoction of it once a week. Where the herb cannot be got, the oil may be procured. In this case, saturate strings daily with it and tie them around the necks of your dog or cat, which you can easily do while it is feeding. By repeating these applications every twelve or fifteen days, the fleas will certainly disappear.

There are not a few diseases to which both dogs and cats are liable, virtually the same remedies being applied to each, except that the doses should be considerably less for cats. They are both subject to distemper, worms, colds and fits, and inflammation of the bowels, eyes and ears.

Distemper is characterized by a running from the nose and eyes and a short, dry cough, followed by a wasting of the flesh, loss of strength and spirits, brain affection, paralysis of the extremities and convulsions. Give a teaspoonful of magnesia every other night, in the early stages, or the same quantity of washed flowers of sulphur.

Another remedy for distemper is nitrate of potassium, four ounces; sulphur, four ounces; charcoal, forty grains, and black antimony, forty grains. Reduce to powder, mix with lard or butter and make into thirty-grain balls, one each to be given morning and evening.

For mange use soft soap and sulphur ointment. Worms are a

frequent cause of fits and when they get into the nostrils or windpipe generally cause death. Powdered glass made up into a roll with butter or lard is often given with good effect for worms in the bowels.

The following has been suggested as the best way to administer medicines: "In giving medicines to dogs, open the mouth of the animal and place in it crosswise a small stick of wood, then thrust the pill, capsule or bolus down the throat with the finger; if a liquid, insert the neck of the bottle on the side of the mouth and hold the head back so as to compel the dog to swallow. When administering to cats, the powder is best blown through a glass or rubber tube onto the roof of the mouth; the liquid medicine is best poured upon the front paws, which the animal will lick off to clean them."

RABBITS, MICE, RATS, ETC.

The boy of the family still occasionally breeds rabbits and is apt to prefer the old-fashioned pure white variety with pink eyes, rather than the more fancy stock. The young should not be taken from their parents until they are six weeks old. Their food, as the boy well knows, consists of grass, hay, vegetables, fruit, scraps of bread, etc.

Like rabbits, white mice and rats are very prolific and pretty. The mice are perhaps the most intelligent of them all. Rabbits bring forth eight or ten young, four times a year; mice, from five to twelve, six times a year, and white rats have from eight to fourteen in a litter, as many times annually as the mice. This very fruitfulness has proven one of their chief drawbacks as household pets.

GOLD AND SILVER FISH

Those who have taken the pains to keep those beautiful varieties of fish, originally brought from China and known as Gold, Silver and Pearl, will insist upon including them in the class of household pets. They certainly often show a personal liking to those who feed and care for them, just like a cat or dog. At their regular hours of feeding they also seem to be in a pleasurable state of expectant excitement, not unlike the wild beasts at the public parks under similar circumstances. Such at least is the claim of their friends and keepers.

Since the preparation of special fish foods and their sale at aquaria stores, it is less than ever a difficult matter to keep the finny pets in

good condition. They also do well on a little sweet cracker, or bread crumbled into the water. Either should be given in very small quantities, however, as if it sours in the water, the fish are apt to be injured. Fresh, cut earth worms are the best food possible. Fish diseases are few and easily detected; when a fish is sick he becomes faded in appearance and comes often to the surface for air. If he shows those symptoms he should be at once removed from the other fish.

Fish should be kept in a cool place, and the sun, even in winter, should never be allowed to strike full upon the globe or tank in which they are confined. Do not forget to partially change the water several times during the week, or to place in the aquarium a good supply of sand and growing plants. The latter absorb the carbonic acid given off by the fish and, in turn, throw off the oxygen required to maintain the fish in vigorous life.

Gold fish seem especially adapted for indoor or aquarium life. Although originally denizens of a warm clime, they are naturally hardy and, with proper care, will thrive. It may be, also, that, like the canary bird, they have been so long domesticated that they no longer need nature's surroundings.

"They should be kept in a vessel of sufficient capacity," says an expert on the subject, "and be given fresh water every day, or at least every other day. It is best to clean the vessel then by washing it inside with a cloth. The fresh water ought to be clean and not too hard. It is not good to feed them as the food will only serve to render the water unfit for their existence; and, if renewed every day, the water itself furnishes them with enough material for their sustenance. Fish kept in this way often perish for want of oxygen. Anything, therefore, which consumes it ought to be avoided; and this is a reason for not giving them any food. Green leaves of living plants have an opposite effect."

The above remarks about feeding, especially apply when the householder relies upon natural food for her fish. They are not so pertinent when prepared food is used which is designed to dissolve without harming the water in any way. If the food is used, which is thus scientifically prepared, it is not, of course, necessary to change the water as often as when the fish rely upon the foreign substances which they find therein. But whatever kind of food is given, the growing plants should not be missing.

CHAPTER XXIV

BEES, HONEY AND WAX

Italian Bees the Best Honey Makers—Advantages of Bee Farming—The Old Way and the New—Handling of Bees—Transferring and Doubling Up—Water and Food—Wintering of Bees—Laying Up Their Winter Stores—Proper Way of Feeding—Spring Dwindling—The Queen Bee and Her Brood—Foul Brood and How to Treat It—The Honey and Wax—Comb and Extracted Honey—Clarifying Honey—Adulterations and How to Detect Them—Beeswax—How to Prepare It.

There is perhaps as much improvement in bees nowadays as there is in any other stock kept on the farm. So that if you have a few colonies of bees sitting about your place that have been there for years without any change of blood you are like the farmer who is satisfied with a scrub stock of horses, cattle, hogs, etc. Better give them away, or get some new queens and introduce them, and thus be up-to-date with your bees.

As to breeds the Italian bees are the best, and the improved Italians are better. Many are the varieties that have been brought to this country and thoroughly tested, only to prove the superiority of the Italians. Beekeepers are now breeding for length of tongues, and the "long-tongued" Italian bee will soon be sipping honey from the bottom of the red clover tubes.

Having secured the best possible stock of bees from some reliable breeder, commence work in the early spring, as at this time one colony of bees is worth any three colonies at any other time of the year. While it is true that the bees sell a little cheaper in summer and autumn the difference is much in favor of spring purchases. A colony of bees, simply, is not all the beginner should have in starting with bees. He should also have a good bee smoker, some extra hives, and if timid about handling them, a bee veil will give him con-

BEES, HONEY AND WAX

siderable more courage to start with; and it is an absolute necessity for the beginner. Extra hives, equipped with honey boxes, foundation starters, and a complete little outfit like this are the all-important things for the beginner to have.

For ten or twelve colonies of bees one will need perhaps \$10 worth of surplus boxes, foundation, supers, etc., on hand ready for immediate use. To neglect having these will be a loss of fully ten times their cost. This is no high estimate of the loss at all, and it may double this.

The matter of starting with bees with the intention of going into it extensively depends somewhat upon the locality as a good honey producer or whether or not many bees are there kept. Localities may be overstocked, so that the crop of honey cannot reach a profitable basis. But this is rather the exception. One can easily attend to one hundred colonies and give them half his time.

Bees may be kept on a waste piece of ground which would be of no use otherwise, and as they feed themselves and pay for being kept, it would seem that there should be more of them in the country. One does not have to own the broad acres from which the bees do their gleanings, nor build for them costly houses. The poorer a man is the less excuse he has for not having plenty of honey for himself and his family to eat.

Two or three hives of bees even will supply an ordinary family with honey the year round, and in some years of excellent honey flows one hive will do it. There are some people who think bees dangerous to keep on the farm, and from fear of them do not get them. These same people may have a cross dog or a kicking mule from which more injury might occur in a week than would occur from bees in a year or a number of years. It is very foolish, indeed, to look upon the honey bee as an enemy in any sense, and a study into their nature and usefulness would allay all such suspicion. It is very strange that a very small per cent. of even the most intelligent readers on the farm know that honey bees are of great benefit, fruit bloom being largely dependent upon these insects for successful fertilization and the production of fruit. Every orchard should have bees in it; every farmer should have an orchard: so all farmers should keep bees.

A Better Way Than the Old.—"In early times we did not consider

small swarms of much value, and neither were they," writes A. H. Duff, of Larned, Kansas, "with facilities we then had of caring for them. We had no foundation, and no movable frames to give them a start in their business, so they had to begin at the stump and build combs, fill and complete it with honey and brood, and by autumn they had not comb enough to cluster on in winter, nor honey to carry them through, so that we did not consider them worth hiving at swarming time, even as early as June or July. Now we hive them as late as September, or later if they want to swarm, and we can fix them up by giving them combs of honey and combs of brood, and we could send them directly into winter quarters the next day after they swarmed in good condition. So that the old adage

'A swarm of bees in May is worth a stack of hay;
A swarm of bees in June is worth a silver spoon;
But a swarm in hot July is not worth a fisher's fly'

is all exploded now.

"A swarm of bees hived on a full set of combs already drawn out will fill the same with brood and honey in two or three days and be ready for surplus boxes if done during the honey season, where if hived in the old way they would be two or three weeks in accomplishing the same amount of work. Foundation comb very nearly answers the purpose, and it is used now by almost every one who keeps bees, and in every case by the specialist. To increase bees by swarming under this process of management gives splendid results, and it takes but a short time to build up a large apiary from a few colonies to start with. The cost of a full set of frames thus filled with the foundation is about seventy-five cents, and it adds fully one-half in value to the colony. It not only gives them a good start in business, but it insures nice, straight combs, which are easy of manipulation."

Handling of Bees.—Bees are very kind and gentle if you treat them right. Now this is a remarkable assertion to make to many people. Even many farm beekeepers will say it is false and that the only way they can do anything with bees is to fight them with fire, slaps and kicks. Such beekeepers should go out of the business at once, and it would be better for both them and the bees to set the hives over a sulphur match.

It is a very easy matter to teach a colt to kick or bite by teasing and abusing, and it is a very easy matter to make a colony of bees cross and irritable by careless, rough handling. Bear in mind that bees do not like any rapid jerking or quick motion about the hive, and in all your movements about the apiary be slow and gentle. It has been said "speak to your horse as you would to a gentleman," and the same rule applies in the treatment of bees. Hence, if you would have gentle bees, when you wish to open a hive blow a little smoke in at the entrance, then wait for five minutes until the bees have filled themselves with honey, when they are like men after a good dinner—not disposed to be quarrelsome. Carefully pry or lift up one corner of the hive cover, taking care to avoid all snapping or jarring, and blow one or two puffs of smoke in under the cover, just enough to drive the bees down among the combs.

When you wish to take out a comb gently loosen the ends of two or three combs next to it, using a chisel, screw-driver, or some implement strong enough for the purpose, always being careful not to pinch or hurt any of the bees, and to lift out the frames very slowly, returning them in the same manner. Do not attempt to handle bees immediately after a heavy shower, or when from any cause they have been compelled to stop working in the fields, as at such times they are liable to be cross and irritable.

A very handy thing to have around the apiary when handling bees is a piece of burlap large enough to cover over the hive; this should be made wet, and after wringing the water out of it may be used to cover the hive when the cover is off, and will keep the bees down on the side where you are not working.

Transferring a hive of bees is a good lesson for the amateur in handling. It is usually done in the spring, when there are few bees and little honey in the hives. First, get the new hive all in readiness to receive, and by the use of a good bee smoker, smoke the bees in the old hive by raising it a little from the bottom board and blowing the smoke well up among the insects. Continue smoking them moderately for a few minutes to allow them to fill up on honey, and again apply the smoker. Now turn the old hive bottom up, and if the bees come to the top to any extent, smoke them back down into the hive. With the necessary tools then draw out the nails, or cut them off, and take two sides off the hives. If any combs are fastened

to the inside of these, use a knife with long blade to cut them loose. Now cut out the first combs, and with a feather from the wing of a turkey brush the bees off and cut the comb to fit inside the new frames, and fasten it there by wrapping the frame with hard twine and tying in several places. Proceed with the next combs, and now brush the bees into the new hive where the first combs are placed, and so on until all are in the new hive.

A colony may be without a queen, and if so, robber bees will find it and destroy it; besides, they will get into a very bad habit to thus begin robbing in the early spring, while the colonies are all small, many so weak that they can scarcely defend themselves against persistent robbers. A queenless colony is of no use whatever, and the sooner it is taken up the better it will be. Frequently the bees may be saved by uniting them with another colony, or colonies, but this is all that can be expected from a queenless hive, except it is a very strong one, and a queen can be procured for it.

The following method of "doubling up" is given by Mr. Doolittle, the well known New York apiarist: "For two or three small colonies, make a box that will hold twelve quarts; for larger colonies, one that will hold at least twenty quarts. One side must be of wire cloth nailed on. The other side should consist of wire cloth nailed to a light frame so it can be easily removed. A funnel is put into a hole in the top of the box. Blow a little smoke into the first hive and pound on the top with the fist, then treat in like manner the others in succession. In five minutes from pounding the first hive, the bees will be filled with honey. Shake the bees into the funnel, caging the queen when found. A cloth in the funnel when not in use keeps the bees in. Bump the box down so as to shake the bees on the bottom, remove the funnel and cover the hole. Mix the bees thoroughly by shaking and tumbling the box. Bump it down again and drop into the hole a caged queen, having the cage suspended by a wire hooked over the top of the outside box. Have candy enough in the case."

Water and Food.—Bees consume large quantities of water during the spring when they are breeding. When they can gather nectar from flowers they usually get enough water, but when honey is not coming in, they make a rush for the water. It is very necessary that they have access to convenient places, and if these are not naturally convenient they should be furnished. It is best that they should

have them near during the spring months, when the weather is a little cool and the wind strong, as it is very difficult for bees to fly very far when they are chilled.

Ordinary open vessels will not answer for watering bees, as they are thus drowned in large numbers. Floating sticks or straws on the water may save them, but it is best to make something that will better accommodate them. A leaky barrel, kept filled with water as it leaks out and covered over, will answer nicely. Any tight barrel may be used by making a number of small holes in it sufficient to allow the water to slowly come to the outside. Bees are quite fond of salt, and an old salt barrel will hold water after being soaked up, and still leak enough to supply them. A tin containing brackish water is sometimes provided. This fondness for salt is often illustrated by the eager way in which they collect on a spot of ground upon which liquor from corned beef has been thrown.

Where bees are kept to any extent they frequently become very troublesome about watering tanks used to water stock, and not only drive the stock away, but they are themselves drowned in large numbers. In such a case a watering place may be fixed up for them near the apiary, and thus avoid the trouble referred to. When once they take up with a certain watering place, it is hard to get them from it; it is best then to cover the tanks so closely that it will be impossible for them to get into the water, and in a short time they will take up with the new watering place.

Bees are most fond of those places where their favorite flower is to be found; therefore bee-keepers should encourage the growth of such shrubs and flowers as are known to supply honey and wax in the greatest abundance. In most cases bees do not fly far for food, generally not more than half a mile, and they may be observed to return with great haste to the hive when a storm approaches. The following are the most favorable for pasturage, and those which blossom early are the most desirable. The shrubs and trees are gray willow, tulip, poplar, persimmon, gooseberry, raspberry, apricot and all other fruit trees, American linden, locust, broom and alder; the flowers are mignonette, lemon thyme, garden and wild thyme, buckwheat, winter savory, hyssop, and mustard, turnips, cabbage and white clover, when left to seed, and scarlet and other beans.

Mignonette, borage, and lemon thyme are among the best, as they

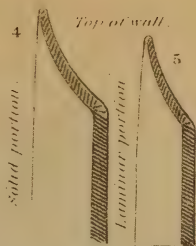
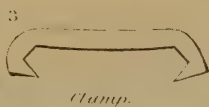
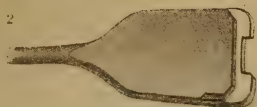
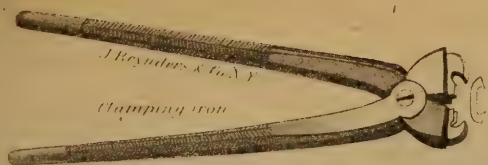
continue very long in bloom and yield fine honey. Rosemary is a great favorite, but seldom supplies much honey in this country, unless the weather proves very hot and dry, when it is in blossom. Fields of beans, white clover and buckwheat are also of value as honey producers.

WINTERING OF BEES

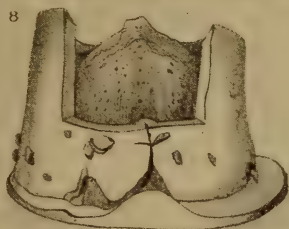
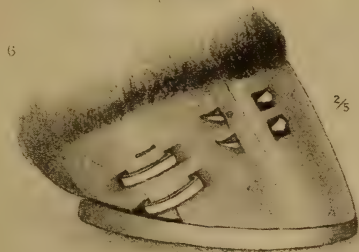
When it comes to the care of bees in winter, special and elaborate instructions are required as to proper feeding and protection. Some apiarists hive their bees in warm, dry cellars in winter, but this method is considered more difficult and require far more personal attention than out-of-door wintering. In the spring bees wintered in cellars are especially hard to manage, as they become uneasy after such long confinement. One is very much tempted to set them out when fine weather makes its appearance, and this mistake is frequently made, resulting in great damage to the bees and often in heavy losses. If bees become very much aroused in the cellar during early spring, and before the weather has become settled, it is better, if we are compelled to put them out, to allow them to get a good fly, and then return them for the time being. It is true that this is considerable extra labor, especially if we have a large number of colonies, but it will pay in the end.

The following has been suggested as a good way to proceed: "As soon as it is settled cold weather, say about the first of November, place the bees in a dark, quiet cellar that will keep vegetables well, and maintain an even temperature of 45°. Of course the bees should have plenty of honey to eat and twenty-five pounds will be none too much to last them until they can gather a supply in the spring. To prepare them for the cellar, remove everything about the frames and put three or four sticks, one-half an inch square and nearly as long as the hive is wide inside, crosswise on the frames, and put on a new honey quilt. This will give the needed ventilation, retain the heat and give the bees a chance to move over the frames. This should be done before cold weather, so that when it is time to put the bees in winter quarters all that it will be necessary to do will be to remove the cap and carefully place the colony in the cellar."

In considering the question of out-door wintering, which is far the more common method, an experienced culturist insists that the bees



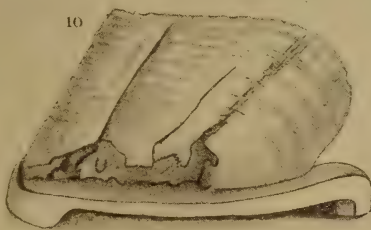
Actual thickness of walls of hoof



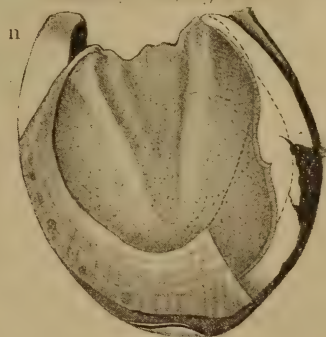
The crack. Wall removed to show absorption of coffin bone



Treated by clamping with nails



Cracked walls



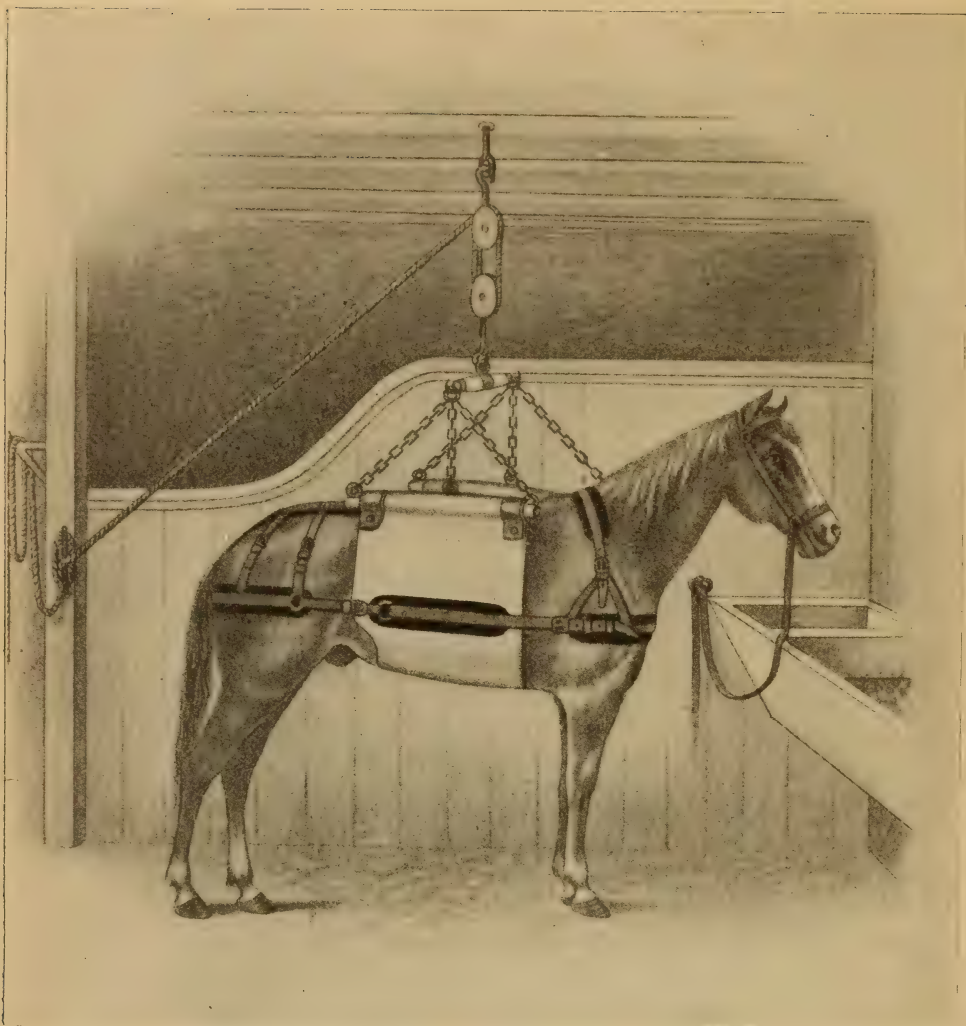
One effect of Quarter Crack

QUARTER CRACK AND REMEDIES.

From Special Report on Diseases of the Horse—United States Department of Agriculture

QUARTER-CRACK AND REMEDIES.

Cracks in the hoof are usually the result of brittleness from old age, or alternate changes from damp to dry surroundings. When they are in the front of the hoof they are called toe-cracks; when on the side, quarter-cracks. Above is illustrated their appearance, with the tools, clamps and nails used to repair these defects.



From Special Report on Diseases of the Horse—United States Department of Agriculture

SPRAINS OF THE LOINS.

Sometimes from violent exertion, or a severe fall, a horse will sprain the muscles about the back and loins. Besides medical treatment, absolute rest is necessary to regain his usefulness. One of the best ways to effect this latter is to place the animal in a sling as illustrated above.

should not be moved to a new locality at the approach of winter, except they are taken a mile or more away. When moved long distances, they mark the new location, and no loss is the result; but when taken to an immediate vicinity, they will return in large numbers to their old locality and thus endanger the welfare of the colony. Just at the approach of winter is the most dangerous time, because then the colony is weak enough at best.

In choosing a winter location another mistake is often made by the selection of the south side of a building. But the south, or sunny side, proves a snare to the bees. They warm up readily and fly out on days that are too cold for them, and the result is that many are not able to return. Bees in such a place will consume more honey and will not winter so well.

A. H. Duff, of Larned, Kansas, has made a close study of bee culture and we are indebted to him for much which follows regarding the proper way of feeding bees in order that they shall lay up sufficient winter food. He says that the two principal causes of loss in winter are weak colonies and lack of food. Either one may be remedied in the fall if taken in time. Weak colonies may be made to breed up strong in the fall if fed early, or they may be united until strong ones are made. Of the two plans feeding is the best, if the colony fed is not so weak that it will be an impossibility to make it gain enough strength.

The cause of so many weak colonies in autumn usually is due to late swarming or dividing, and if we would make it a rule to allow no swarms later than the middle of June in a good honey season, or earlier if the season is not good, we would have but few weak swarms to contend with in autumn. The food for a colony in winter, and the position it occupies in the hive, is the most important thing of course.

During the honey season when the bees are breeding their best, there is but little honey retained in the brood chamber, if surplus boxes are on the hive, and the result is that at the end of the honey season but little honey will be found in the brood chamber of the hive, if there has been plenty of room given for the surplus. What honey is found below is stored in the outside combs, and the bees are left with a large brood chamber empty, and if no good honey flows occur in the after part of the season, to enable them to fill up their combs after the surplus honey is removed, they thus go into winter

with too much empty comb capacity, with a cold brood nest, and their honey too far from the bees, as they cluster up into small space in cold weather. A good late flow of honey, or feeding with the surplus boxes off, until the combs are full of honey about the bees, is the proper way to have them.

The sugar is prepared in different ways for feeding, but the best method of using it is to heat it after adding water. The amount of water added is of some importance, especially when feeding for winter stores a little late in autumn. The more water added, and the thinner the sirup, the more work is required by the bees to evaporate the surplus water. Hence the stores are more readily ripened, and the bees will seal up the combs much sooner, if given them with less water. We can have it too thick, with too much body for the bees to work it well, as well as too thin.

It is a pretty good plan, when feeding for winter, to add water in about the same amount of bulk as that of sugar. This will give it about the proper consistency after it is well melted on the fire. The sirup should not be boiled, but may be brought to the boiling point, and then removed from the fire. The sirup may be fed warm, but not hot, or it may be cold. If the weather is a little cool, it is better to give the sirup warm, otherwise it makes no difference.

Feed bees only in the evening, and as late as possible to see to do the work. When many colonies are together, or in the immediate neighborhood, if fed during the daytime it will cause great excitement among the bees and frequently incites robbing. If fed late in the evening, the bees do the work of storing in the night-time as well, and everything will be quiet in the morning. Wooden troughs are best to feed from, and these should be supplied with floats of sticks or shavings to keep the bees from drowning. Use an upper story on this hive to keep the feeders in, and feed only in this way.

Every colony should have twenty-five or thirty pounds of sealed stores in the hive, and should be protected in some way, and not left sitting out in the ordinary summer hives. Bees that are compelled to battle with the storms of winter in thin, unprotected hives, will consume much more honey than those protected. The additional amount of stores consumed will pay for the extra protection. Packing straw about the hives, or setting corn-stalks about them, is not of much account, except as a sort of windbreak, but if we are to

winter them out-of-doors, we should provide a chaff hive, or large box, made fairly tight, with good cover, one that will not leak. A hive thoroughly packed in such a box, with good dry chaff to the thickness of four or six inches, with a roof that will keep the same dry, may be considered in reasonable shape to winter well. The entrance to the bees must be cut out through the outside box, so that the bees may go out any time the weather is suitable. Large dry goods boxes answer the purpose very well, and need but little preparation other than making a good roof. A good windbreak is of much importance also, besides the chaff hive protection, and may be made in any way or of any material at hand. The place that bees occupy should be separated by a substantial fence from all other places, that stock may be kept entirely from them in winter.

Spring Dwindling is one of the greatest drawbacks to bee-keeping, and is caused generally by the bees having an insufficient supply of honey and bee bread, which causes them to push out after pollen whenever the sun shines, regardless of the cold winds, and so many are chilled and never return that the colony becomes so reduced that it gives up trying, and either joins another colony or dwindles away entirely. The month of April is perhaps the most critical time in the whole year. But if a colony has sufficient store to keep them rearing brood till the 10th of May they will generally be able to take care of themselves.

About the first thing to look after when the bees are placed on the summer stands, and protected to some extent from cold winds, is to find if each colony has a good queen. Another is to see if they have plenty of stores, for in the time of brood rearing they require a good supply, and it disappears rapidly where there is little or nothing coming in.

THE QUEEN BEE AND HER BROOD

A queen bee is certainly a very important factor in the hive. Without a queen a colony of bees are absolutely worthless. No other bee in the whole colony can take the place of the queen, and no house of lords can run business in her absence as it runs with her present. In the absence of the queen, some of the worker bees will assume the duty of laying eggs, but strange to say these eggs will

hatch to drone bees only, and a poor quality of drones into the bargain.

When the young queen is a few days old, she becomes fertilized by the drone or male bee. This takes place out of the hive, in the open air, when both are on the wing. If you should confine a young queen, even with a hive full of drones, she would not become fertilized. Some young queens have defective wings and cannot fly, and in every case these are worthless. During the most busy part of the season, the queen is said to lay as many as 3,000 eggs a day. While the average life of the worker bee is about forty days, the queen will live two or three years, and queens have been known to live as long as five years. She becomes fertilized but once, and ever after produces the same stock. Strange to say, while she may live to see millions of offspring, the drone, or male bee, dies at once. Queens are more profitable the first year of their life, as a general thing, and after that are not so prolific, and more inclined to swarming. The queen produces two kinds of eggs, a fertile egg, and an infertile egg. The former hatch out worker bees, and the latter drones.

This would seem a little strange, to say that an infertile egg will hatch anything, yet it is true in the case with bees, and it may easily be proven. For instance a young queen that cannot become fertilized, owing to her bad wings, will begin to lay eggs usually, and every egg she lays will hatch to drones. This frequently occurs. With very rare exceptions, two queens cannot occupy the same hive, but proceed to battle on first sight.

Every colony should have a good fertile queen, and it is of importance that she should be of the present season's rearing. Many young queens are lost on their fertilization trip. Supposing the fertilized queen to have safely returned, however, it is best to at once clip her wing, so that she can never fly again. An experienced bee-keeper says that he clips about one-third of one wing off. He uses a pair of pocket scissors for this purpose, and the operation does not seem to cause any pain at all. Great care should be taken in handling the queen, as if she is injured the bees will kill her.

The location of the brood nest is also of much importance, and if it is found at the side of the hive it should be removed to the center, and care must be exercised to keep the brood in a compact form and

not allowed to scatter to different places in the hives, for the bees cannot thus take care of it, and it must be lost.

The food for the young bees consists of pollen, honey and water, which has been digested in the bodies of workers and resembles a thick cream. Dust of finely ground grain is a substitute for pollen and the bees will gather it in their pollen baskets with as much earnestness as the regular pollen from flowers.

Foul Brood.—The cause of the foul brood, or the death and putrefaction of the bee larvæ, was for some time unknown. It has been ascertained to be a bacterium, or fungus, called scientifically *bacillus alvei*. It is so small that millions of it may be found in a bee larva less than a half inch long. Under the microscope it looks like a bit of grayish thread with a few hairs on each extremity. By means of these hairs it moves itself. It multiplies by dividing. When it is developed it breaks in two, and each half goes into business as a separate concern. In two or three hours it is ready to divide again.

In twenty-four hours a *bacillus alvei* will divide from eight to twelve times. In eight divisions it will produce 2,048 bacilli. A bee larvæ three-eighths of an inch long may contain 2,000,000 bacilli. In twenty-four hours with twelve divisions, 2,000,000 would produce a number simply beyond comprehension. This enormous reproductive power is what makes foul-brood a pest so formidable. Besides multiplying directly by division, the *bacillus* also gives off spores, or seeds, which are so small that even the most powerful microscope can hardly reveal them. These pores float on the air and may be deposited by the wind or by other insects in colonies of bees.

Experimenters give various methods of fighting this pest. Carbolic acid, salicylic acid and phenol when brought in contact with the bacilli, will kill them at once; but the employment is laborious and dangerous, and it is considered the safest and best to burn all the combs of badly affected colonies with all the brood and honey they may contain; then subject the bees to a starvation cure, after which they may be allowed to build up in a renovated or new hive. To facilitate this work the frames of the hives may be filled with comb-formation, and the colonies may be fed for awhile with medicated sirup.

THE HONEY AND WAX

Honey is the only sweet that is absorbed by the blood without fermentation. It is therefore much more healthful than sirups and candies, being, in fact, often used as a medicine and an aid to digestion. Honey is placed upon the market in two forms—either in the comb or out of it, the latter being known as extracted honey. A few suggestions are therefore made as to the harvesting and preparation of both the comb and extracted honey, as well as the best ways of extracting beeswax.

Honey.—It is natural for bees to swarm without storing any great quantity of surplus honey, so that we must control swarming, if we wish to secure large crops. The best way to do this is to keep the colony well supplied at all times during the honey season with surplus storage room. It is when they become crowded that they take a notion to swarm.

Along about the closing of the honey harvest, which usually occurs about the first to the middle of July, the bees should get particular attention as to the condition they are in. The surplus honey, that is, all that is completed, should be removed. It is a mistake to leave surplus honey on the hives after it is ready to come off. It will not only crowd the bees, but if it is left until autumn it will be colored, and for market will be spoiled for the best prices. The clear white surface of the comb will become yellow and what is called "travel stained" by the bees. The surplus may be reduced at this season of the year, but should not be entirely removed, for later we may have a flow of honey so that considerable may be stored in the surplus boxes. A successful producer of comb honey thus lays down directions as to removing the product during the honey flow: "Have your hives such that you can keep piling up supers as long as the bees will work in the top one. Remove the bottom one as soon as most of the sections are full. Put the unfinished sections in a super by themselves, and when the super is full put it out on a hive to be finished. Do not leave the finished sections any longer than is absolutely necessary, as the bees in traveling over them soil the comb and lower the selling qualities of the honey.

"Cleaning the sections before casing is quite important, and is very tedious. Every particle of dirt and propolis should be scraped

off. Never try to wash them. About the only way to better the appearance of the comb is to sulphur and bleach in a strong light."

It is better to market comb honey as soon as possible after it is taken from the hive, if prices are satisfactory, for it is somewhat difficult to keep in a perfect condition for very long, unless it receives special care. Honey of all kinds should be kept from dampness, and the ordinary cellar is no place for honey. It may be kept perfectly in any dry room above ground, for the heat will not damage it, but rather help to more thoroughly ripen it. This applies to both comb and extracted honey, and of the two the extracted will bear less dampness.

It is no doubt a fact that extracted honey is most profitable for a large majority of the bee-keepers of the country because they are in a measure at the mercy of dealers who will not pay the price that extra fine comb honey is worth, being obliged to pay a nearly level price for all that comes to them, because they have neither time nor inclination to seek a market for the best, preferring to sell in lump lots. For the bee-keeper who is near a large town or city there is a place to dispose of extra white comb honey at a price that will make it an object to sell in sections.

The ordinary sections contain about fourteen ounces of honey, worth, when extracted, not more than seven cents. If the comb is nice and white and the sections neatly filled they may be sold for anywhere from twenty to thirty cents a section. Wherever there are people who can afford to indulge their taste for the best and finest looking products for their table, there will be found a market for all the first-class honey comb that is offered at a price that will make extracting a losing operation. When comb honey must be sold for ten cents a pound and extracted brings seven or eight cents, the bee-keeper cannot afford to sell the comb, as it costs too much time to make it, every pound of comb taking as much time to make as ten pounds of honey.

If extracted honey is to be put up in small packages, such as pints, quarts, or gallons, it is best to pack it thus early and before it begins to granulate, which occurs in the autumn months. If extracted honey has been taken from the combs a little early, and before it is thoroughly ripened, it should be left in open packages until well-ripened, after which it may be sealed up tight. There is nothing

gained in sealing up air-tight, well-ripened honey, more than to protect it from dirt, for it will keep any length of time in open vessels if kept away from dampness and well ventilated.

A good way of clarifying honey is to dissolve it in water, adding to every twenty-eight pounds of honey one and one-half pounds of animal charcoal. Gently simmer for fifteen minutes, add a little chalk to saturate excess of acid, if required; strain or clarify, and evaporate. Honey acquires a darker color if heated in copper or iron vessels; the above process should therefore be conducted in earthen or well-tinned copper pans.

As honey is frequently adulterated it is well to know how to detect the artificial from the real article. Molasses may be detected by the color and odor, and potato-sugar sirup by boiling the samples in water containing about two per cent. of caustic potassa. If the liquid remains colorless it is pure, but if it turns brown it is adulterated with the sirup mentioned. Should starch be used, cold water will bring out a cloudy appearance and iodine a blue color. When it contains wheat flour it is first liquified by heat and, upon being cooled, becomes solid and tough.

Artificial honey is sometimes made as follows: Take ten pounds of Havana sugar, four pounds water, forty grains of cream of tartar, ten drops essence of peppermint, and three pounds of honey; first dissolve the sugar in the water over a slow fire, and take off the scum. Then dissolve the cream of tartar in a little warm water, and add, with some stirring; add the honey, heated to a boiling point, and the essence of peppermint; stir for a few moments, and let it stand until cold, when it will be ready for use.

Beeswax is obtained by melting the comb in water after the honey has been removed, straining the liquid mass, remelting the solid portion, and casting into cakes.

A method of preparing wax for polishing floors is as follows: Twelve and one-half pounds yellow wax rasped, and stirred into a hot solution of six pounds pearl-ash in rain water. Keep the mixture well stirred while boiling. It soon commences to froth, and when this ceases, the heat is stopped. Then add to the mixture, while still stirring, six pounds dry yellow ochre. It may then be poured into tin cans or boxes, and hardens on cooling.

CHAPTER XXV

PHYSICAL AND SOCIAL TRAINING

Physical Culture of Man, Woman and Child—Exercises to Develop Special Muscles—Daily Drill for the Women and Children—Masculine Exercises—Social Forms and Etiquette—Street Etiquette for Women—Proper Dress and Deportment—Visiting Etiquette and the Use of Calling Cards—Home Etiquette and Table Manners—Full Dress and Party Etiquette—Accepted Forms and Rules for the Christening, the Wedding and the Funeral—Conversation and Social Correspondence—Official Form of Address.

To all those who object to the word "training" as applied to social life, we will say that in order to put yourself and others at ease and to oil the wheels of individual progress, a certain training in the etiquette generally accepted as standard is absolutely necessary. This may be obtained by experience, often of the most humiliating kind, or by the study and application of the rules of conduct laid down by ladies and gentlemen the world over. In either case, training is necessary, and it ought not to be a question which course in the securing of it is the easier or more sensible to follow. With the training comes the "culture," which is the word usually applied to physical and social education.

Social culture largely depends on a healthful condition of the physical nature and a graceful, pleasing and self-contained bearing. A sound physical condition, as well as a healthful mind, is largely at the foundation of good manners.

PHYSICAL CULTURE OF MAN, WOMAN AND CHILD

In all ages and countries physical culture, in various forms, has occupied a large share of royal, public and individual attention. First and foremost were the Greeks with their Olympian games, revived within late years. To be a victor in the Olympian games was to be little short of the god Zeus, whom they celebrated. He was crowned with much ceremony, exempt from taxation and otherwise signally honored. After the Greeks came the opulent Romans who built magnificent baths, gymnasiums and amphitheaters. But in their times the baths were chiefly for the rich, and the athletics for the pro-

fessionals, the physical culture of the masses being largely neglected. The Romans were therefore crushed by the northern barbarians, whose bodies were vigorous with the exercise of the chase or war and the freshness and rigors of outdoor life. During the middle ages, when the common people were as warlike as the nobility and the twang of the bow string and the rush of the battle axe were everywhere, the discipline of the human body became a matter as much of self-preservation as of glory. Physical culture had taken another form.

In modern times the fortunes of war do not depend upon bodily strength, and purely physical prowess is not esteemed higher than brutish. Physical culture is now held to be of account only as it proves an aid to higher growth and achievement. In our days, therefore, it goes hand in hand with education. Public school, college and university each places athletics within reach of its scholars and, in fact, encourages a moderate amount and degree of exercise as being conducive to intellectual vigor. Those nations, also, which have best studied physical culture as a public necessity, such as America, Germany, Great Britain and Sweden, show the most energetic characteristics as peoples.

Modern forms of physical culture are chiefly directed to the problem of doing the greatest good to the greatest number; the chief feature of modern physical culture is its democratic character. Thousands, yes millions, of men, women, and children, throughout the world, are indulging in various forms of it—boating, yachting, swimming, skating, football, baseball, golf, tennis, and in-door gymnastics either directly under instructors, or under their guidance through correspondence. Others are methodically following instructions, as published in standard works on the subject. The literature upon the subject is so full that physical development may be cultivated in countless ways and is open to men, women and children of all ages. The simplest and most feasible way of obtaining the physical exercise necessary to the most complete usefulness in active and practical life is to adopt some form of culture in which apparatus is not necessary. Fortunately many courses in this special form of physical culture have been formulated and from them we select a few of the simplest exercises.

PHYSICAL CULTURE FOR WOMEN AND CHILDREN

The following daily drill is recommended by a high authority as the best for the symmetrical development of women and children; by symmetrical, meaning the development of both grace and strength. The general position to assume is heels together, toes turned out, body stiffly erect and slightly inclined forward, abdomen held well back, chest out, arms at side, shoulders back, head erect, with chin slightly in, and weight upon the balls of the feet.

Exercises for Neck and Throat Muscles.

1. Without changing position, incline the head until it rests on the chest, then raise with deep inspiration and lower with expiration, five times.

2. Bend head to right shoulder, as far as possible, slowly inhale as head comes up, and exhale as head goes over to left. Raise the head with the inhalation and bend over to the right with the exhalation. Repeat five times.

3. Turn head as far as possible to the right, then turn forward with inhalation and turn on to left with exhalation. Repeat five times.

4. Bend head forward until chin rests on breast as at first, roll the head with deep inspiration toward the right until the head is bent as far back as possible, then exhale as the head is rolled on around the left to the front position. Repeat this five times.

Exercises for Shoulder, Back and Chest Muscles.

1. Shrug shoulders together, up and down, five times.

2. Shrug each shoulder separately, five times.

3. Shrug shoulders up, back, down and forward with a rolling motion, five times; roll each shoulder alternately.

4. Place clenched hands upon chest, strike both straight out, five times; then strike out singly and again together.

5. Go through with the same movements from the side.

6. Same movements upward.

7. Same movements downward.

8. Flex arms; that is, hold the arms straight out, palms up. Bend arm at elbow with muscles in tension, together, singly, alternately and together, each five times.

9. With arms straight out, bend wrists up and down, right and

left, in rotary motion, five times together, singly, alternately and together.

10. Clench fists; that is, open and close hands together, singly, alternately and together, five times each.

11. Swing arms around the shoulder together, singly, alternately and together five times.

Exercises for Waist and Abdominal Muscles.

1. Place hands on hips, thumbs back, bend body at waist line, not below it, as far as possible backward; inhale as body is brought to erect position and exhale as body is bent as far as possible forward. Repeat five times.

2. Bend body to the right as far as possible, inhale as it is brought erect and exhale as it is bent as far as possible to the left. Repeat five times.

3. Bend body forward as far as possible at the waist line, rotating toward the right. Repeat five times.

4. Rather a more violent exercise to especially strengthen the abdominal muscles consists of lying flat upon the floor with arms at side but slightly raised; fingers, arms and legs rigid, with feet together. Raise the legs slowly until the feet are above the waist line, returning them slowly to original position but not touching the floor. Inhale during upward movement of legs and exhale during downward. Repeat three times.

Exercises for the Leg Muscles.—To develop the muscles of the legs no exercise is better than walking over a hilly country. If this is impracticable there are various indoor movements which will bring the same muscles into play, minus the exhilarating outdoor air and surroundings.

1. Relax the body above the knees and throw the weight upon the heels; raise the toes as far as possible and reverse, throwing the weight upon the toes. Thus will be imitated the rocking motion of walking.

2. Rest the weight on the right foot, raising the left leg until the knee is parallel with the waist line; alternate with left foot and right leg. Repeat fifteen times.

3. The running movement may be obtained by planting one's self firmly on the floor, with left foot well advanced and clenched hands on a level with the chest, each hand, with the shifting of the feet,

being brought alternately backward and forward. Repeat fifty times, if you do not get too much out of breath.

General Rules.—If it is the aim to strengthen a special set of muscles which are defective, too much stress cannot be placed upon the necessity of concentrating the mind upon the parts brought into play. As soon as your mind gets listless your muscles will also relax and the exercise will not have much effect. This is not so apt to be the case in outdoor exercise, where one has the advantage of fresh air and other influences calculated to keep the brain active and the mind alert.

While exercising all tight and heavy clothing should be discarded, and although the room should be kept cool—say about 62°—the avoidance of all draughts is to be enjoined.

Rigidity of the muscles should be the rule, some recommending tightly clenched fingers and others half clenched. In the latter case it is claimed that the muscles of the hand and wrist are better developed. Further, while some instructors believe that in exercising the muscles above the waist the person should stand with his legs fully extended, others insist that the knees should be bent and the muscles held rigid in that position. It is claimed that by merely assuming the latter position not only are the muscles of the legs strengthened, but those of the shoulders, chest and back.

The best time for indoor exercise is immediately upon arising in the morning, unless one is troubled with insomnia, when it should be taken before retiring. A warm sponge bath is good afterward, and a brisk rubbing is necessary.

Deep breathing, which is a splendid exercise in itself, should accompany all physical training, and when possible, breathe through the nostrils. (See "Masculine Exercises" for special instructions in lung development.)

If you do not get enough exercise in faithfully performing the duties of your daily life, and believe it is for your good to make a business of applying yourself to these forms of physical culture, carry them out persistently and methodically.

The above general rules, as well as special exercises, may with advantage be adopted by men also, although they generally insist that their cases demand more heroic treatment.

MASCULINE EXERCISES

Those whose life is largely passed out-of-doors seldom need special exercises to keep them in good condition. Farm work is as perfect a form of exercise as could be artificially devised, because it is largely conducted in the open air and brings, in its various operations, every muscle of the body into active play. These rules are therefore not offered to the fortunate worker upon the farm, but to him who has been denied his advantages in securing, without money and without price, a system of physical culture which meets every practical requirement, we offer the following. The suggested exercises are more in the nature of hints than anything which is deemed an approach to perfection:

1. Place heels together, with feet at right angles; legs either straight or bent at the knees; head back, chest out and abdomen in. Take a deep breath; extend the arms, with fingers clenched, or half clenched; bring arms together in front of the face and back to first position. Repeat rapidly ten times.

2. Following same general instructions as above, extend the arms above the head, with palms forward and thumbs together; lower arms to side in a half circle and raise slowly to first position. Repeat ten times.

3. Extend left arm above the head, with right arm dropped to leg; bring left arm down to leg, drawing right arm up at same time; continue these movements rapidly ten times. When taken in succession the above three movements are good to develop the chest, shoulders and back.

4. Another good movement for the chest and shoulders is to place the hands together at the front of the body, bring them slowly to a point above the head and then, separating them, draw them down slowly to the shoulders, resisting all the time as much as possible; then raise the hands and bring them back to the original position. Repeat ten times. In all cases inflate the lungs as the arms go up, and exhale as they descend.

5. Also for chest and shoulders: Extend the arms on a line with the shoulders, palms down. Bend the elbows (upper arm rigid) so that the hands describe a half circle forward, keeping them still on a level with the shoulders; bring finger tips together in front and then bring hands back to original position. Repeat twenty times.

6. Edwin Checkley, well known as an instructor and writer in natural methods of physical training, is especially insistent on the point of deep and full breathing, both as an accompaniment to exercises and as an exercise in itself. He says: "The unfortunate habit of abdominal breathing, as it is called, is particularly common among men. The use of the corset and other reasons have produced among women a habit of breathing with the upper part of the lungs—a habit that has been, to that extent, fortunate. Women breathe less air than men, but they breathe it in a better way."

Mr. Checkley also shows that deep chest breathing is not only of the greatest benefit in the development of the lungs, but of the muscles of the upper part of the body, claiming that more of them can be brought into active and symmetrical play than by any other method. He therefore gives instructions for carrying out certain movements, combining both muscular and respiratory exercises.

(a) For instance—place hands together in front of the body locking the thumbs; raise hands, keeping arms straight, and take deep, long breath; when arms are stretched above the head to the full length, slowly lower, exhaling. Repeat ten times. When shoulder and chest muscles are all right, the arms can be stretched over the head without bending the arms or unlocking the thumbs.

(b) Place elbows on a level with the shoulders, hands on the same line; extend arms with hands together in front of body, as in the act of swimming, taking at the same time a deep breath; with lungs expanded bring hands around in an outer circle to point on a level with the shoulders, slowly exhaling while bringing them to the original position. Repeat ten times.

7. Perhaps the best exercise for the development of the hands, arms, shoulders and back consists of throwing yourself upon the floor, face down and resting upon the hands and toes, with the hands directly under the shoulders; then lower the body so that chest and chin barely touch the floor; body must be rigid and lungs inflated; hold the breath until the body is raised to original position. A beginner will usually be satisfied by repeating this movement three or four times.

8. Several movements may be taken for the hips, back and abdomen. One of these is to raise the arms directly above the head, palms forward; bend forward from the hips and, without bending the

knees, touch the floor, and, if possible, the toes. Repeat five times. This movement is also considered a good chest expander.

9. A somewhat similar exercise is to lie upon the back, with arms extended from the shoulders; then raise the body slowly, touch the toes without bending the knees, and return to original position.

10. The reverse of this movement, which especially strengthens the muscles of the stomach and abdomen and is recommended for those suffering with indigestion, is to assume a position upon the back, with arms at the side, but not resting upon the floor; keep feet together and legs rigid, raising the legs to a point above the waist; then lower the legs slowly, but do not rest them on the floor. Repeat the movement five times.

11. Several exercises in the development of the leg muscles have already been given in the drill recommended for women and children, which the man may apply to himself. For the development of his biceps and forearm several movements, already doubtless familiar to many, may be suggested. The most common one for the biceps is to clench the hands, with the palms forward, and keeping the elbows close to the body raise the arms to the shoulders, bending them only at the elbows; for the forearm, to clench the hands, with the palms toward the thighs, and bending the arm only at the wrist first move the hands, or fists, inward and upward, and then reverse the motion. Both movements should be taken about twenty times.

SOCIAL FORMS AND ETIQUETTE

True politeness is the outward expression of a delicate and considerate soul. There are a few in this world whose personalities are so high and strong and tender that they may conduct themselves before all classes of people, meet all grades of society, and never by their words or acts give offense. But for the most of us, however good at heart, a little knowledge of social etiquette is assuredly not a dangerous thing, and even if the majority of accepted rules are but an "old story," many of us will find, perhaps, by carefully reviewing them that we have either forgotten some of them, or carelessly neglected them.

We continue the subject by offering a conundrum:

Question—What is the Keynote of good manners?

Answer—B Natural.

It is presupposed, however, that the nature of the person who acts naturally in society is of high grade; for if his nature is boorish and without training in the forms of social etiquette, he will act like a boor. The fact therefore redounds to the good sense of the people generally that the study of social forms and etiquette is a serious and common one.

One of the most famous books ever written along these lines—an old book, long out of date, but one which is still thumbed into tatters—was Lord Chesterfield's "Letters to his Son." It has been edited and condensed dozens of times, but, although the rules of social conduct there laid down are practically for the benefit of young gentlemen, many of them are applicable to both sexes, and we shall have occasion to refer to them again. Be natural, then, if it is safe; if not, read Lord Chesterfield and other later suggestions (such as those which follow) on the prevailing forms and customs of good society.

Street Etiquette for Women.—Certain general rules can be safely followed regarding proper conduct upon the street, both as to dress and deportment, the supposition being that neither the man nor the woman is about to make a formal or ceremonious call. Let us suppose that the man is attending to his business duties and the woman is about to "go shopping," or is going upon a journey.

First, as to the woman. Neither her dress nor deportment should attract attention to herself from being too pronounced, or "loud." The materials may be rich, if the woman is matronly, and light and "fluffy," if she is young; but, on the street, one bright color is enough.

In choosing your dress, consider first what colors will harmonize with your prevailing physical temperament—whether blonde or brunette—and, second, what style will be most appropriate to your form. White may be worn by women of all ages and all complexions, though if one is unusually pale some warm color should be worn near the face. Creamy tints, pink, browns and even tea-rose colors are often used with good effect. Blondes with blue eyes sometimes wear yellow ribbons in the hair. Very often one wishes to adopt that color which will form the most striking contrast, and brunettes are therefore partial to gold and red.

The following appropriate suggestions were lately made by Mrs.

T. V. Morse, of the Art Craft Institute, Chicago: "In selecting colors study the complexion. All complexions have a predominating color, either pink, yellow, brown or gray. You can get the prevailing color generally from the eyes or cheeks, or the hair. There is no complexion that cannot wear some sort of a modification of green. Brunettes should wear warm green. Blondes should wear cold green. A woman with blue eyes should not insist on wearing blue gowns. The color of her hair may not permit such a color. As a rule golden-haired blondes can wear pale pink, and if they have blue eyes pale green will make them look most charming. If a woman is a real blonde yellow should predominate. Brown shades are best adapted for girls with chestnut hair."

In a street costume a neat fitting dress and cloak are the first things to be considered and they should be made so as to modify any disagreeable feature. By a neatly fitting garment we do not always mean one which fits closely. For instance, nothing exaggerates the stoutness of a short, fleshy woman so much as to wear a closely fitting dress or cloak, the beholder thus being able to "take her measure" as it were. A loosely fitting garment, with perpendicular folds or plaits, is best for her. For the same reason a tall thin woman should avoid skin-tight robes; the latter, on the other hand, should avoid perpendicular stripes or folds, as they tend to call attention to her height. Small, thin women should not wear too much black. Laces around the throat become them—in fact, anything to skillfully conceal the "angles."

If one wishes to have her waist look slender and graceful the belt should be worn so that it slips down in front and is pushed up behind.

As to hats, the stout woman makes a mistake by wearing a tall, large hat, thinking thereby to make herself look imposing. She should neither wear that, nor some pretty delicate trifle, only fit to frame a slight girlish face. On the other hand the very tall woman should wear neither style of hat. Study the happy medium; although it may be laid down as a general rule that the moderately tall, willowy figure best becomes the large style of hat.

Both as a matter of precaution and taste it has become a rule of good society for the woman to wear little jewelry upon the street—a watch and brooch are sufficient.

In the matter of veils, plain tulles and colored nets are considered

best. The warm-blooded brunette looks well in a light-colored veil in which the dots are large and near together; the fair-haired, blue-eyed woman looks well in a large meshed, dark-colored veil. A blue veil gives the skin a fair, clear look and a gray veil is very unbecoming to the sallow woman.

The style of gloves and shoes adapted for street wear is largely a matter of individual taste, but here again the general rule of modesty and serviceability applies. Upon no account, however, squeeze either your hand or your foot into a glove or shoe too small for you. If you do so, everybody you meet will know it and you will be not only uncomfortable, but ridiculous. The days when the doll-like hand and foot were at a premium are past. Cinderella especially is at a discount.

As viewed in good society, which is becoming more and more to mean the prevailing common-sense of men and women, the trailing skirt upon the street is an object of both amusement and disgust; amusement, because the possessor of it often imagines she is making an impression on account of her majestic and elegant appearance, and disgusting, because she is in reality sweeping up the filth along her route and perhaps spreading disease as she moves along. The modern street dress should always clear the ground.

If, in spite of this precaution, on account of snows, rains and mud, the garments are liable to be soiled, there is an awkward and there is a ladylike way of raising the skirts. They are not raised high with both hands, but with one hand only, just above the shoe and even all around. There is no one thing in which the average girl requires more practice than in acquiring the knack of gracefully raising her skirts. In this connection it is a sensible, as well as a modest practice to avoid the wearing of white skirts in rainy, snowy or muddy weather.

Rainy-day etiquette requires, if you meet a gentleman friend with an umbrella (and you have none) and he cannot accompany you home, but insists that you take his umbrella, you should return it to him at the earliest opportunity, with a note of thanks. It is in poor form to accept the escort or the tender of an umbrella from a stranger.

A lady is recognized upon the street by her general composure and grace of bearing. She neither dashes along as if on a wager, nor shuffles her feet. She does not swing the arms nor allow any

undue motion of the hips. Her head is up and her parasol is held at such a height that she can clearly see where she is going. Her entire bearing is one of independent composure, without stiffness.

If she meets an acquaintance on a crowded street, she does not stop in the middle of the sidewalk and obstruct the progress of all pedestrians, but draws her to one side. Should it be a gentleman and he wishes to enter into conversation, he will, if possible, walk along in her direction.

In the daytime it is not considered proper for a lady to take the arm of a gentleman, unless he is her affianced, her husband or near relative. In the evening, or when the streets are slippery, it seems to be optional whether the lady shall take the gentleman's arm, or allow him to take hers.

If a lady is with two gentlemen she should walk between them, and if they are acquaintances merely should endeavor to treat them impartially.

When a lady meets a gentleman it is her part to speak first, thereby intimating that she desires to continue the acquaintance.

If she wishes to show a disinclination to do so, she may bow, but show such formality in her bearing, that her meaning will be clear. By pursuing this course, instead of the cruel, unladylike one of looking the gentleman full in the face and making no sign of recognition, she will sustain her reputation for courtesy and at the same time make her meaning clear.

It is polite for the lady to invite her escort to enter the house, but if he declines, she knows that it is not good breeding to urge him; if the hour is late, she will not even invite him in.

Too much cannot be said about the proper conduct of ladies toward strangers. If there is an obvious intent on their part to attract your attention, or force their attention upon you, there can be but one course to follow—coldly ignore them. If you show temper, or indignation, you draw public attention to yourself and often give an unprincipled man the very chance he sought, to continue his conversation with you.

There are many instances, however, where the acts are those of true courtesy and delicate consideration. Some girls make the mistake of ignoring such courtesies and thereby throw themselves open to the charge of unladylike conduct.

For instance, if a stranger offers you his hand in alighting from a car, or omnibus, or offers to assist you in crossing a muddy street, there is nothing presumptuous in the act itself. A lady will readily gauge the motive, by the manner of offering assistance, and if she is convinced that it is purely an act of courtesy should gracefully acknowledge it as such. Of course in large cities where there are policemen at the most frequented crossings to act as official escorts, the latter is now a rare case to be considered.

Street car etiquette is much discussed, but the rule seems quite well settled that as it is impossible that all ladies shall have seats, the preference should be given not to sex, but to age, obvious infirmity of any kind, and women with small children. In the street cars the man and woman of average health and strength are on the same plane; but if for any cause a gentleman gives his seat to a lady, she should never accept it without a bow or a word of thanks.

It is not unusual for one who would wish to be considered a lady to refuse a seat, with an injured toss of the head and a "Oh, I can stand!" especially if, for some reason, she has been standing for quite a while. This certainly is not good manners.

Where two ladies are together and only one seat is vacated, several things should determine who should occupy it. Age or infirmity should again be taken into consideration, if the ladies have simply met, and the fact as to whether they hold the position toward each other of guest and hostess. Common sense would dictate in the latter case that the hostess should insist upon her guest taking the seat.

Doubtless other points in street etiquette will come before the lady, as the result of thought or experience; but eventually they will all be decided, if rightly decided, by the rule of consideration for the comfort and feelings of others.

Street Etiquette for Men.—There are certain rules of street etiquette which the true gentleman instinctively follows, but which cannot be too often repeated.

The true gentleman never stares at passers-by, or, if he is with an acquaintance, makes remarks about them in an audible tone of voice.

If he meets a couple walking together, the lady only being an acquaintance, he does not detain them, or even join them, unless invited to do so by the lady; he simply bows and passes on.

The gentleman, when walking with the lady, always requests to carry any parcels which she may have, especially if it is raining or snowing. He holds the umbrella over her and otherwise makes it easy for her to protect her garments.

It is no longer considered a binding rule that the gentleman should take the outside of the walk. In fact, in crowded thoroughfares, where there are many turnings, it is often quite ridiculous to see an escort continually dodging behind the lady, now to this side and now to that, in order to conform to this old rule. The custom originated in the idea that in case of danger it would be easier to protect the lady with the right arm free.

When accompanying a lady on the street, while he should be attentive to outside matters which will insure her comfort and safety, he should not be continually gazing at others and withdrawing the bulk of his attention from her. In this regard street etiquette is the same as ball-room etiquette.

Concerning the street attire of the gentleman, it depends, as in the case of the lady, upon the occupation and special errand. The business man does not dress as the physician, whose time is largely spent with the family, nor does the physician, as a rule, attire himself like the lawyer. The business man upon the street seldom wears gloves in mild weather unless he is about to make a formal call. As a rule he is attired in a single or double-breasted sack, or three-button cutaway, with striped or checked trousers to match, or somewhat lighter. He wears a derby or fedora; colored or white shirt; standing, or high turn-down collar, with a neutral colored tie; jewelry largely a matter of taste and financial condition.

An invariable custom in good society, which is of comparatively recent origin, is for the gentleman to bow, whether he is with a lady and meets one of her acquaintances, or is with another gentleman and meets a lady with whom his friend only is acquainted.

VISITING ETIQUETTE

The suggestions here made are for the benefit of the visitor, not the hostess—the latter portion of the subject will be considered under the head of the Art of Receiving and Entertaining. For the proper conduct of the visitor, the same general rules apply to both lady and

gentleman. Supposing that they have stood the test of the rules applying to Street Etiquette, a short call, or a visit is now in order.

Etiquette for Short Visit, or a Call.—Morning calls may be made at any time between noon and six o'clock P.M., although in small places and with people of moderate circumstances, it is looked upon as more convenient for the hostess to receive callers between two and five in the afternoon. By conforming to these hours neither the noon-day nor evening meal will be interfered with.

If it is a formal visit of any kind, it should not exceed fifteen or twenty minutes in length. It is customary to make such visits to one who has recently moved to another town, or into a new neighborhood, and is a thoughtful act of courtesy which is usually heartily appreciated by the stranger.

The effect of the call, however, will be entirely spoiled if the visitor shows a disposition to pry into the affairs of the newcomer, or appears to be taking an inventory of the furniture and other household effects. To walk around the rooms examining pictures or other ornaments, uninvited, or to turn over and examine visiting cards, or do anything else which shows bald curiosity, or a forwardness not warranted by intimacy, are acts which are indelicate, not to say rude. Conduct which is allowable with close friends may be very impolite with comparative strangers. Wait for your new-found acquaintance to make all the advances toward a closer intimacy. This is not only the safe way, but the polite way.

A gracious leave-taking, after making a formal call, or a visit of any kind, is an art in itself. If you are a comparative stranger, when "your time is up," you are to politely withstand any courteous pressure to remain longer, and withdraw promptly, but not abruptly.

If you are visiting a friend, perhaps an intimate one, when you are ready to go do not think of "something else to say," or if you do, defer the saying of it to another time. There are few things so embarrassing even between warm friends, if the truth be plainly spoken, as to receive a visit from one who never knows how or when to go.

Evening calls should usually be made between the hours of eight and nine and the visit should not extend beyond ten o'clock, unless the caller is especially intimate.

Sunday calls, in the afternoon and evening, are becoming quite

common, especially in the large cities, where friends and relatives often live at a great distance from each other. Care should be taken, in making such visits, that neither head of the family objects to them on religious grounds; and do not make them unannounced, since you may thereby be interfering with plans which your friends have already made.

Do not feel offended, if the subject of your call is "not at home," or "engaged;" for there may be a very good reason, not at all personal so far as you are concerned, why she cannot see you. If you repeatedly call, meet with the same reception and do not receive a note of regret, then you may decide that the acquaintanceship has been intentionally broken.

No rules can be laid down as to the style of conversation to be introduced in making a call, or short visit. It is a good practice, however, to avoid heavy subjects and discussions. Touch lightly upon a variety of subjects and do not expand upon any one, unless those whom you are visiting show a desire for the details; above all, don't "talk shop," for if you do, you are sure to enter into the most tiresome of details. It is better to keep silent, even at the risk of being thought stupid, than to do that.

Should callers appear while you are present and you cannot extend your visit longer, do not leave abruptly as if you did not wish to meet them. At least exchange a few pleasant words with them and give a reason for your departure.

If your call is either one of congratulation or condolence do not delay it more than a week after the event which prompts the visit; if it is one of condolence and you are not on intimate terms with the afflicted, it is sufficient to leave a card with offers of assistance.

There are few whose heart will not dictate the proper course to be pursued in a visit of condolence to a friend.

The Use of Cards in visiting is a subject about which so much has been written that the average mind has been thrown into a bad state of confusion as to the latest rules of good society regarding it. As to the forms of visiting cards:

1. The husband's name usually appears upon the card of a married woman; but it is bad taste to use the professional title—as Mrs. Dr. Jones.

2. Widows use their maiden names.

3. The eldest daughter of a family uses only the last name—as Miss Jones.

4. Younger daughters use their first names—as Miss Alice Jones.

5. During the first year of married life a joint card is often used.

6. Young ladies who have just “come out” in society have their names on their mother’s visiting card.

7. A motherless young lady may have her name on her father’s personal visiting card.

8. The residence address is allowable upon the card.

9. Gentlemen and ladies may use medical titles, and the former, military, naval or judicial.

One should never start to make calls without a supply of visiting cards; since if the lady is not really at home the leaving of a card is the only sure way of showing her that you have called, and, if she has a special day for receiving and a number visit her, without the cards to remind her, she may forget just who have paid their respects.

When about to leave on a protracted visit send cards to your friends marked P. P. C. in the left hand corner. By using the initials of the French phrase, *pour prendre congé*, you thus take leave of them. Also when you return, send your visiting cards, to imply that you wish to continue the acquaintance. When changing your residence also send out cards giving your new address.

A card stands for the person, and sending a card with an invitation to an entertainment is equivalent to an invitation in person. A card should be sent in return and if the person cannot attend the entertainment she should still consider that she “owes a call” to the person who invited her. In case the invitation is to an afternoon tea, however, this call is not due.

It is customary now to send cards of congratulation to the parents of engaged couples, if the parents have formally announced the betrothal. Birth cards are also sent to friends, as soon as the new arrival has received a name.

The following instructions as to the leaving of cards may save confusion and perplexity: A gentleman leaves cards for host and hostess and a lady for the ladies of the house. If there are sons in the family, the visiting lady may leave her husband’s card for them. If no one is at home, the lady leaves her card and the gentleman two.

Young gentlemen leave cards for all the ladies of the household, as well as for the mother, or chaperon.

First calls should always be returned in person, if the health will permit. To return one of these by the sending of a card is not considered polite.

Cards sent by messenger are placed in a single envelope, unsealed. If sent by mail the unsealed envelope is enclosed in the sealed.

In the matter of sending cards by messenger or mail, it is customary "to do as you are done by."

HOME ETIQUETTE

Home manners are the final test of the true lady or gentleman. At home, where everybody is apt to feel unrestrained, there should, nevertheless, be the restraint which true politeness places upon conduct calculated to touch the sensibility of any member of the family. It is here, too, when the individual is not upon parade, that he shows his true colors; here you may learn whether the customary politeness of the young lady or gentleman springs from a really good heart, or whether it is assumed as a shield to a really hard and coarse nature. It is the home that cultivates future happiness or misery in those who are to be the husbands and wives of the coming years. It is here that the individual either allows himself to criticise and to "nag" because of necessary personal peculiarities, or to learn the secret of compromise, of self-sacrifice in the interest of family peace and of charity for those who are bound to him by the sacred ties of blood and close association.

There is not a family living, the members of which have not individual peculiarities—dislikes, it may be, some of which are reasonable and some simply neither to be explained nor argued away. The nerves of one may be put on edge by the biting of worsted. Another may dislike the crunching of hard toast or an apple. To some cats may be worse than snakes. Such physical dislikes as these are inborn, and home etiquette demands that when they are pronounced, each member of the family, instead of laughing at them, should courteously endeavor to avoid giving pain.

Respect of children toward their elders and the courteous treatment of children by their elders cannot be too often enjoined.

It is both impolite and cowardly to gossip, or speak evil of any one in the privacy of the family circle. This rule applies to old and young alike.

There is an etiquette which husband and wife owe to each other in the government of their children. First, as they naturally instruct their children to avoid quarrels, they should never dispute with each other before the younger members of the family.

If either has given positive instruction to a child, and the other does not approve of it, there should be no argument before the family. Such differences of opinion should be settled in strict privacy. That is not only true marital courtesy, but it is better for the child.

Neither husband nor wife should expect cleanliness, or pleasing manners in their children, if they do not personally set them the proper example.

Promptness at meal hours is not only an act of consideration for those who cook the meals and do the household work, but it is a very important part of the code of home etiquette.

Table Etiquette should be as closely observed at home as at a state dinner. Throwing aside all consideration of the duty you owe those with whom you are in such close contact, it is by far the safest policy to be polite at the family table; for if you daily forget your manners there, you are apt to overlook them in public.

If you are at the head of the table, it is a waste of words to be informed in detail as to how you are to as carefully note the wants of members of the family as you would when guests are to be served.

The advice to keep the mouth closed when eating may also be superfluous.

It may be well to state, however, that several former rules of table etiquette have undergone a change. In former years it was a breach of table etiquette to take the last of anything; now it is considered discourteous to refuse. As soon as you are helped, it is now considered good manners to at least commence to prepare your food; otherwise, if you wait until everybody is served, especially if there be a large number at the table, your food may become cold, which is a cause of disquietude to the lady of the house, whether she be your mother or hostess.

It is as much a violation of table etiquette for the server to over-

load the plate as to go to the other extreme. To overload, is to imply that you wish to avoid the trouble of serving again, or that the person you serve is a gormand. Particularly as it spoils the appetite of some to have their plates piled with food, this fault should be carefully avoided.

The server should remember the taste and even peculiarities of different members of the family, as to the preparation of food. This is particularly necessary in regard to gravies and sauces. Nearly everyone has also a choice as to certain portions of the meats. This "remembering" is part of the delicate consideration and the regard for trifles which make up domestic life and which are at the basis of home etiquette.

Tea, coffee and chocolate are no longer drunk from saucers and no well-bred person eats with the knife.

A slice of bread should be broken before being buttered, and eaten in pieces.

Never put bones or fruit stones on the table cloth, but place them carefully on the sides of your dishes.

In removing bones or pits from your mouth do not use your fingers, but your fork or spoon.

It is a vital part of table etiquette at home and elsewhere to avoid disquieting conversation, or anything which will suggest unpleasant pictures. Quarreling, bickering, stories of murders and suicides, and disgusting details of any kind, should be as studiously avoided at the home table as in the most general society.

FULL DRESS AND PARTY ETIQUETTE

The occasions when full dress is appropriate are at balls, or formal parties, at operas and at evening weddings. It would be futile to attempt to give various styles of what are known as full dress. As the occasions arise, when it is proper to be thus attired, the lady will naturally seek a dressmaker whose business it is to select the appropriate and becoming costume.

The young gentleman's evening, or full dress, consists of black trousers, dress or swallow-tailed coat; a low-cut black or white vest; opera or high silk hat; white shirt, cuffs, pearl studs and links, and tie; pearl or white gloves; lap-front or standing collar; patent leather shoes or pumps. For day weddings, afternoon calls, mat-

inees, teas, etc., his coat may be double-breasted, trousers striped and of a subdued shade, lighter than the coat, and his tie colored.

In the matter of dress for young gentlemen and ladies the nature of the occasion should always be kept in mind, as it is considered very bad taste to appear in an elaborate costume at an informal gathering. In these days it will be hardly necessary to warn the young men against painting and powdering, as did Lord Chesterfield in his book of etiquette, to which we have already referred.

Except that you should be more reserved in your manners, party etiquette should be no different from home etiquette. At formal gatherings Lord Chesterfield's advice to young gentlemen should be followed by both sexes. "The general rule is," he says, "to have a real reserve with almost everyone and a seeming reserve with almost no one; for it is very disagreeable to seem reserved and very dangerous not to be so." The same old but good authority upon social etiquette also observes that "modesty is a polite accomplishment and generally is an attendant upon merit; modesty, however, widely differs from an awkward bashfulness."

Here, then, is the secret of good "party manners" in a nutshell: Be self-contained without being disagreeably reserved; be modest, without being awkwardly and painfully bashful.

When you have arrived at your destination, before remaining to carry on any conversation with your friends proceed to the dressing-room. Your escort will accompany you to the door, will go to the gentleman's dressing-room and, having there left his own hat and overcoat, will return to rejoin you.

If you have no escort you may call upon the master of the house to accompany you to the hostess, whom you must speak to before you join the guests.

If you have an escort who is a stranger to the hostess, introduce him to her, after which it is her part to see that he becomes acquainted with any other guests whom he does not know.

If you are alone and meet a friend in the dressing-room who has an escort you may enter the parlor with them to pay your compliments to the hostess; or two ladies, who are without escorts may enter together.

A gentleman who escorts a lady to a party is under particular obligations to introduce her to strangers, escort her to the supper

table, see that her dancing program is filled and attend to all her wants. While not monopolizing her entire time, he should keep her always in mind and look to her comfort and pleasure. On the other hand the lady is under obligations never to accept the services of another gentleman to do those things which her escort is, by all the rules of etiquette, required to do.

Never refuse an introduction to a guest or to dance with one, as you thereby may justly offend the hostess. If you have any good reason for not wishing to form or to continue an acquaintance, you may regulate your conduct accordingly at some future time.

A true lady will not only avoid familiarities toward gentlemen, but ladies themselves should avoid it in their conduct toward each other. Such exhibitions are invariably looked upon as affected, since it is beyond reason that, in public, caresses and other outward signs of affection should spring really from the heart.

Avoid crossing the room alone, or in a hurry, as if you had lost your self-possession.

If you are obliged to leave before the usual hour of departure, do so as quietly and privately as possible. Explain the circumstances to your hostess; that is sufficient. Do not take a formal departure, or you may induce others to think it is time to go also.

Your escort has always the right to the first dance.

If you are so unfortunate as to get your dancing number "mixed," decline to dance that number altogether, thereby avoiding all show of partiality.

Do not dance unless you are perfectly familiar with the number, trusting to your partner to carry you through.

There is no talent which the man or woman who wishes to be polite should more earnestly cultivate than that of remembering names. It is often a natural talent, but may be cultivated and acquired. At all events, it is always considered a personal compliment to have a new acquaintance remember your name and address you by it, and is an accomplishment which one must possess if he wishes to be popular in society.

It is hardly to be supposed that the man or woman of to-day need be told that it is impolite to sit with the back to another person, without asking to be excused; to yawn, to talk loudly or to whisper confidentially; to point at anybody; to dispute over anything; to put

cake in the pocket or to appear with dirty hands and finger nails. Yet many modern books of etiquette are largely devoted to those matters which ought to be decided by common sense, if one has not already seen them repeatedly in print.

CHRISTENING, WEDDING AND FUNERAL ETIQUETTE

In the life of the average individual, these are the three most important events—his birth, wedding and death. Society has therefore devised certain forms for their proper observance. The pretty customs by which the attention of friends is called to the birth and christening of children are of somewhat late origin.

Baby Etiquette.—In many families it is customary to introduce the baby to society as soon after its birth as the cards can be mailed. The card is to this effect: "Florence J. Brown, born March 12, 1903, at 1 A.M. At home, 128 Gladys Avenue." The announcement card is usually tied with white ribbons.

When the card has been received female friends send notes of congratulation and inquiry to the mother, and the gentlemen pay their respects to the father. No one should call until assurances have been given that the mother is in condition to receive visitors.

After a few weeks, the time depending on the health of child and mother, and some near relatives having accepted the office of godparents, preparations are made for the christening. When the ceremonies are to be at home, the house is adorned with flowers and the baptismal font is placed in the front parlor. The parents are stationed beside it, with the godparents, or sponsors, on either side of the father and mother. The infant is brought into the room, a hymn is sung, and after the baptism and christening, other music and the benediction follow. If the health of the mother will permit, a reception often closes the joyous occasion—joyous, often, for everybody but the baby, who has not yet learned the rules of self-restraining etiquette.

The christening card of invitation is sent out in the names of the parents, mentioning the time and place where the ceremony is to occur and the hours of reception, if one is to be given.

When the christening is at the church the baby is carried to the font by an elderly lady, or nurse, the sponsors follow and the parents come last. The godfather stands at the right of the infant and the

godmother at the left. After the ceremony the friends disperse at the door of the church, or, if the condition of the mother will permit, are invited to the house for a luncheon.

Wedding Etiquette.—It is becoming more and more customary to make formal announcement of the betrothal of a couple. This is sometimes done by the mother of the future bride, who sends out cards to intimate friends, or by sending the announcement to some newspaper. In olden times the bans were published through the church.

After the announcement of the engagement has been made, it is considered proper for the young lady, at least for a short time before her marriage, to partially withdraw from society—that is, she does not make ceremonious calls, or attend formal entertainments. It is supposed, however, that she will send cards to those to whom calls are due, although she is not debarred from visiting intimate friends.

This is both an agreeable and sensible custom for many reasons, chief of which are that it enables the young lady to withdraw herself from curious eyes without remark, and, at the same time, to give the necessary attention to her wedding outfit and other arrangements.

It is hardly necessary to give the stereotype forms of the modern wedding announcement, they vary so little, and any stationer has them in stock. The parents or guardians of the young lady make the announcement and extend the invitation, and if the permanent address of the bride has been decided upon it is well to include it with the wedding invitations.

Bridal costumes are, of course, as varied as the brides themselves. As to the arrangements appropriate to a home wedding, it should be stated that the floral decorations should be simple and tasteful, rather than elaborate. A pretty custom is to select some such flower as the lily, or rose, and let it give the prevailing tone or color to the designs and decorations.

The most striking features of the floral display should, of course, be made in the quarter of the room where the ceremony is to occur, and, if desired, the way thither may be marked by white ribbons held along either side by little girls.

All being arranged the clergyman enters the room and stands facing the people. To the music of a wedding march the bridal

couple follow and face him, with the father, or some near male relative, in sight of the clergyman, to give away the bride. If there are bridesmaids and groomsmen, the former, of course, stand beside the bride and the latter beside the groom.

If the wedding is at the church everything is more elaborate and formal. Next to the chief parties concerned, perhaps the head usher and "the best man" are the most important personages. The former is the head executive and must see that the near relatives are shown to the place reserved for them nearest the bridal couple; that the other ushers are attentive to their duties and that the organist strikes up the wedding march at the proper time. The proper form for the usher is to present his right arm to the lady, her gentleman escort following.

The best man has particular care of the bridegroom, who, sad to relate, is more apt to be flustered and make blunders than the bride. He drives to the church with the future husband, is by his side at the altar as the bride approaches, sees that he safely places the ring upon the lady's finger and otherwise proves his "best man."

The number of ushers, bridesmaids and groomsmen is a matter of individual preference, about the only set rule as to selection being that the bridesmaids must be younger than the bride.

Should there be a reception after the wedding, it usually takes place at the home of the bride's mother, who has previously sent out invitations. If there is no reception at that time, the bride and groom send out a joint "at home" card.

In former years unless the newly wedded couple took a bridal tour they were considered hardly fit for good society. Of late years, however, even among persons of wealth, this custom has been largely ignored; in fact, it is now considered "quite the thing" to pass the honeymoon in one's own house and, after a time, to send out "at home" cards to acquaintances and friends.

Funeral Etiquette.—However self-possessed, it is not considered proper for one who is most intimately connected with the deceased to take charge of the funeral arrangements. They should be supervised by a near friend, or relative, both of the deceased and the persons most naturally concerned, who will be assisted, and if in doubt, as to his duties, directed by an intelligent undertaker.

All the members of the stricken family should be relieved of

duties necessarily painful, or which will bring them into public notice.

It is customary in some sections of the country and by certain classes of people, especially when the deceased is widely known, to send formal invitations to the funeral that the house where the services are to occur may not be overcrowded.

Where such invitations are sent the one who superintends the funeral arrangements is furnished with a list of the names and is careful to engage a sufficient number of carriages to accommodate all thus invited.

The nature of the services at the house is determined solely by the wishes of the near relatives, and nothing can be imagined more cruel or impolite than to either criticise them, or the lack of them.

Where the burial is to be in another city, it is entirely proper to have the services conducted at the grave.

In the chamber of death, or at the grave, the members of the family need not recognize their acquaintances.

As the coffin is borne from the house to the hearse and from the hearse to the grave, all gentlemen should remain with uncovered heads, either until the funeral cortege is ready to move or the ceremonies at the grave are at an end.

CONVERSATION AND SOCIAL CORRESPONDENCE

Forget yourself; remember others: in these four words lies the secret of agreeable conversation or social correspondence. The charm of letter writing consists in the ability to stamp your personality on the paper, if that personality is of the tender, considerate kind. But before that point is reached where the charm of conversation and correspondence issues forth as subtly as the fragrance from flowers, it is often necessary to pass through a season of real self-discipline.

On this point again we shall refer briefly to the advice of our old friend, Lord Chesterfield: "He who studies to conceal his own deserts, who does justice to the merits of others, who talks but little of himself and that with modesty, makes a favorable impression on the persons he is conversing with, captivates their minds and gains their esteem."

To Be an Agreeable Conversationalist you must be a ready sympathizer. Without monopolizing the conversation you must do your share

of the talking; but, above all things, be a good listener, and when you perceive others talking about things which you know are painful to any of the company, aim in a natural way to change the current of talk.

To be a ready sympathizer you must not allow yourself to be absent-minded. Even in the home circle few things are more humiliating than to find that one's words have fallen on deaf ears; while, in general company, one who is inattentive, or absent-minded, is considered very impolite.

Habitual absent-mindedness in general company is either the mark of a very weak mind, or one which is far above the ordinary affairs of life. Something may be allowed to genius, but the fault mentioned usually accompanies an inferior or an affected nature.

Don't get to be an habitual story-teller, or you will become tiresome. An occasional short story, right to the point, is an agreeable diversion from the current of the average small talk of general society; but the person who comes to believe that his mission in the world is to spice every topic with at least one story becomes somewhat tiresome.

When a story is told don't interrupt the narrator to have him explain it. Let him tell it in his own way to the end. Otherwise you indirectly criticise his performance, which is certainly neither considerate nor polite.

Avoid all topics which may be disagreeably applied by those in your presence, and, upon no account, speak slightly of those who are absent.

Don't talk politics, or religion, if you see that such subjects are likely to create arguments which soon run into contentions.

Don't make a positive statement such as "This is so," or "These are the facts in the case;" but say "I believe this is true," or "This is my opinion." Otherwise very thoughtful people get into this habit of making positive statements, absolutely unqualified, so that it is virtually impossible to carry on a conversation with them.

Overlook deficiencies in others, and, upon no account, parade the knowledge before another which you know he does not possess; the latter is a species of cold-blooded humiliation imposed upon another which is not only the height of impoliteness, but of "refined" cruelty.

On the other hand, do not persistently attempt to "draw out"

people. If one desires to inform you as to personal details in which you may be interested, or upon some general subject about which you think he may inform you, place the opportunity before him, but if he does not seem disposed to be "drawn out," do not persist in your attempts. If you do, it is an implication that you doubt his ability to satisfy you.

Neither attempt to lionize a person, when such a position is manifestly distasteful to him, or to make another the butt of ridicule, however ridiculous the person or delicate your satire.

Keep a check upon your words. However well you are acquainted, do not speak of "the old man" or "the old lady;" it is better even to not inquire for "your husband" or "your wife." Use the titles "Mr." or "Mrs."; or, if the absent ones have honorable titles, "the General," or "the Judge."

Impose a certain amount of self-restraint upon yourself; but avoid all mannerisms. That is, do not have one way of talking to young gentlemen and another of conversing with young ladies.

Social Correspondence.—It is taken for granted that any person who would be interested in suggestions as to the proper forms and agreeable features in social correspondence is versed in the common rules governing capital letters, punctuation and grammar, and the general form of a social letter, with the date line toward the upper right hand corner and the salutation (or address of the person to whom you are writing) below and to the left. Even in the general style, however, there are variations, especially in the form and place of salutation. It is a safe rule to follow, however, to place the name and city residence above the address which is less definite, if your correspondent is not an intimate friend, or you are writing on business matters, as: "John H. Smith, Esq., Chicago, Ill.," above "Dear Sir." Some, however, would place the "John H. Smith, Esq.," at the end of the letter, below and to the left of the signature of the writer.

If you are writing to a comparative stranger, or sending an important letter of any kind, it is well to place your name and address upon the envelope, in the left hand corner.

As to forms of salutations and subscriptions, you must ever keep in mind your relation to your correspondent. If you are writing to a comparative stranger, or in a formal way, "Sir" or "Madam," or

"Dear Sir" or "Dear Madam," with "Yours Respectfully" or "Respectfully Yours" would be the proper forms. Such superscriptions as "I am, Dear Madam, Your Very Obedient and Humble Servant," etc., is not considered a mark of etiquette in America. There may be occasions, however, when you are addressing foreign officials or dignitaries, that it would be considered bad breeding to fail to subscribe yourself in the very formal and perhaps antiquated manner to which they have been accustomed.

As the correspondent's intimacy increases, his salutations and superscriptions decrease in formality, passing through all the grades—"My Dear Sir" or "My Dear Madam," and "Yours Truly," "Sincerely Yours," etc; "Dear Friend," "My Dear Friend," "Dear Jennie," "Dearest Jennie," "My Own," etc., with "Most Truly Yours," "Sincerely Yours," "Ever Yours," etc. It is impossible and would be a waste of words to suggest the various changes that may be made in both salutations and superscriptions, until the correspondent reaches those very intimate relations when all formality is discarded and the forms become matters of personal preference and originality.

In speaking of superscriptions, never contract the habit of always signing yourself "Hastily Yours;" it is not only affected, but usually a very thinly veiled excuse for a slovenly and unsatisfactory letter—unsatisfactory both to sender and receiver.

It is the height of folly to offer special directions to correspondents as to how they should write letters of love, of congratulation, of condolence, etc. In such matters the writer must eventually fall back upon his own sense of propriety, and for him to follow any set rules would make his communications stiff and unsympathetic and at once defeat the object for which they were sent. The best general rule to observe, however, is—even in matters of love: Without being abrupt, do not waste words, but come bravely and courteously to the point. If it is a case of misfortune, or death, do not attempt to lighten the blow by suggesting that "misfortune comes to us all," etc.

When you are replying to a letter, it is considered a school-boy or school-girl style to take up your friend's communication, piece by piece, and comment upon it. If any information is asked you should give what you consider the most important points, at once, and endeavor in every way to treat your correspondent by letter as if you were replying to her in person.

Never deal in profuse apologies about pen, paper, ink, delays in replying, etc. A simple, direct excuse, when you really feel that you have delayed your reply beyond the bounds of courtesy, is due from you, and will be, as a rule, well received; but when you go beyond that, it may seem that you are guilty of a greater offense than you really are.

Official Forms of Address.—It usually happens that several times in the course of his life the average man or woman, who has not been thrown into the society of high officials, will desire to dispatch a communication to persons of rank, but is in doubt about how they should be addressed. For the benefit of such we give a list of some of the most important.

The president of the United States is addressed as "His Excellency the President of the United States."

The address Honorable (Hon.) should be applied to ex-presidents, vice-presidents and members of the United States Senate and House of Representatives, and to governors of states. Lieutenant-governors, members of the legislature and mayors of cities are also often "honored" thus.

The special form of address to a governor is "His Excellency the Governor of Illinois"; to a judge, "His Honor Judge Smith"; to a mayor, "The Honorable Mayor of New York City."

Members of the British Parliament are "Sir David Jones, M.P.," or even "David Jones, Esq., M.P." If he is a duke, after the former address, should be "His Grace the Duke of——." A duke's children are "Right Honorable."

The king is "The King's Most Excellent Majesty" and, after the formal salutation, he is addressed as "Sire," or "May it Please Your Majesty."

The queen is "The Queen's Most Excellent Majesty" and "Madam"; the princess, "Her Royal Highness."

A cardinal is addressed as "His Eminence," an archbishop as "The Most Reverend," and a bishop as "The Rt. Rev.," with such titles as D.D. following the names.

An ambassador is "His Excellency" and a consul has no distinctive form of address, the latter depending upon the rank or title which he is entitled to assume in his own country.

CHAPTER XXVI

ART OF RECEIVING AND ENTERTAINING

What Is Expected of the Hostess—Rules and Forms as to Invitations and Introductions—Dinners, Suppers, Luncheons, Etc.—Literary Entertainments and Music—Cards and Other Games—Novel Entertainments—Outdoor Amusements—Hints to the Hostess Regarding These and Many Other Matters.

In the previous chapter the writer has viewed various matters of etiquette from the standpoint of the visitor and guest, or from the limited confines of the home circle. This chapter treats of the art of receiving and entertaining and is a review of the situation from the standpoint of the host or hostess.

The guest has a comparatively easy task—that of conducting himself with propriety. Although it is expected that he will do what he can to add to the general pleasure of the company, he is not obliged to entertain. The hostess, on the contrary, is under strict obligations to do everything in her power to make it pleasant for her guests, and is expected to have decided upon some forms of amusement beforehand. In order to be really successful in the art of receiving and entertaining guests, the hostess should possess not only pleasing manners and tact in bringing together those who will be most congenial, but she must have a certain cool and executive disposition, that she may not be flurried over any embarrassing situation and that the program may be carried out with promptness and smoothness.

Invitations and Introductions.—Certain well-defined rules have been adopted by good society as to the form of invitations to various social functions, the style of the invitation and the manner of sending it being determined by the formal or informal nature of the reception. Invitations to suppers, or informal affairs, may be written on the left-hand corner of the hostess' visiting card, as "Mrs. Julia Brown, from five to eight o'clock," or "Mrs. John H. Gridley, at home

on Monday, January Eighteenth, Tea at five o'clock." If several ladies receive, all their cards must be enclosed with the invitation. Invitations to suppers may be extended in the same way, or by means of a friendly note, the hostess being sure in all cases to name a definite hour and the nature of the reception, informal though it be.

For elaborate affairs, such as balls or receptions given in honor of distinguished persons, particular attention should be given to the quality of the stationery. The invitations may be written on note paper (cream colored, preferred), heavy, finely grained and unruled, and folded but once, with envelope to match. If the invitation is in the form of a card, the latter should be heavy and placed in a square envelope of large size.

Invitations to elaborate and formal gatherings are, of course, couched in formal language, as: "Mr. and Mrs. Thomas Thorndike request the pleasure of your company at dinner, to meet Governor Jones, at 8:30, 126 Graceland Avenue. R. S. V. P."

Such invitations should be sent out by messenger at least two weeks in advance of the event and the reply should be promptly returned, also by messenger.

It often happens that the guest of the evening is so distinguished that it is considered better form to place his name first, as: "To meet Governor Jones, Mr. and Mrs. Thorndike at home," etc.

But whatever the invitation and whether in the form of a note or a card, don't forget to convey a definite idea of the nature of the reception, as otherwise your guest will be placed in the embarrassing predicament of not knowing how to dress and otherwise arrange her coming. As stated, this information is usually conveyed in a few words in the left-hand corner of the card, if the reception is rather informal, such as: "Five o'clock tea," "Small dance," "Matinee Musicale," etc. In the case of an evening party or ball, where the hostess does not desire her guests to come in full dress, or make other extensive preparations, she writes "informal" upon her card of invitation.

In sending out your invitations be sure that you dispatch a joint invitation to husband and wife.

Should there be several young ladies in the family, one invitation is also sufficient for all. If there are several sons, it is considered better form to send one to each.

But it is a great mistake to include two unrelated young ladies or gentlemen in one invitation, although they may be living in the same house.

When the guests commence to arrive, it is best for the hostess (provided she has a servant or other assistant to first receive them) to take a position near the main entrance, where she can be readily seen and easily reached. It is best that she should not move from room to room, until at least the majority of her guests have arrived.

If they are not acquainted then comes the ordeal of a proper introduction. This, however, need cause no uneasiness if several cardinal points be always kept in mind; they are:

(a) Gentlemen must be presented to ladies, as "Miss Jones, allow me to make you acquainted with Mr. Smith;" or simply, "Miss Jones, Mr. Smith." As a rule, the simpler the form of introduction, the better; although it sometimes happens that the hostess may have been especially desirous that two of her friends should meet, when by making the introduction more elaborate she is able to throw more cordiality into the ceremony.

(b) Youth must be presented to age.

(c) Inferior rank must be presented to superior; for even in the most unpretentious society there are obvious differences in the rank of people thrown together, aside from the purely artificial and unworthy distinction often created by wealth.

If the hostess cannot herself introduce unacquainted guests while others are arriving, during the earlier portion of the evening, it is proper for her to request an intimate friend to do so, and to entertain the stranger until the latter has evidently been placed in a position to feel at ease.

These preliminaries to an entertainment of any kind are usually the most trying stages to a hostess, as, after all the guests have become acquainted and conversation becomes general, formalities are, in a measure, placed in the background and each guest does his part to lighten her burdens. In receiving, especially, the hostess must know how to stand properly and gracefully. Upon no account should she place her hands upon her hips or behind her. The most natural and graceful attitude is to stand easily, when not actually welcoming the guests, with one hand placed lightly in the other. Perhaps an even better rule is to endeavor to forget the hands entirely.

Dinners, Suppers, Luncheons, etc.—Dinners are attended by both sexes, while suppers are more apt to be given by, and for gentlemen, and luncheons and afternoon teas are the particular delight of the fair sex. Breakfasts are customary among literary people of both sexes, whose working hours are usually chosen in the latter part of the day, ten o'clock being the customary hour for such events. When a supper is on the program, it is usually only one of the entertaining features, such as music, dancing, etc., but the dinner is virtually all-in-all—to use an appropriate, although somewhat crude expression, “the whole thing.”

This is the occasion when conversation should be at its best, when there should be no privacies between guests, and when host and hostess should show the utmost care not only in bringing together people who are congenial, but in the seating of those who are invited.

It is generally considered that the oval-shaped table is best adapted for the dinner party, with the host and hostess facing each other at the sides.

The most enjoyable dinner party has neither too many guests nor too many servants; either extreme is apt to create confusion.

As to table decorations and food, suggestions have been given elsewhere, but one precaution should be made emphatic, and that is against placing flowers upon the table which have pronounced perfumes, as those which may be agreeable to some may be so distasteful to others as to make enjoyment of any kind impossible.

If convenient, it is better to have the carving done away from the table, as the guests are thereby served more promptly and with less confusion.

If two servants are waiting upon the table, the guest to the right of the host should be served first, and then those in order, and in that direction, until the hostess is reached on the other side of the table; the second waiter should commence with the guest to the right of the hostess and serve in that direction until the host is reached, who is served last.

The servant should have a napkin so arranged that it will cover the thumb and any other portion of the hand which rests upon the inside of the dishes.

If the dinner is given in honor of a person, or persons, in entering

the room the host should escort the most honored lady first, and last should come the hostess with the most honored gentleman.

Whether the dinner is given to a select few, or to many, the more substantial courses should be preceded by soup, fish or oysters and be followed by salad, desserts, nuts, sweetmeats and coffee.

The breakfast, on the other hand, is ushered in with fruit, followed by eggs, or breakfast food, and some light meat, such as duck or fried chicken.

Literary Entertainments and Music.—There are few receptions or entertainments of a general and social nature which do not embrace some of the features mentioned above. In the arrangement of the programs, as well as the selection of the participants, the hostess carefully considers the tastes and temperaments of her guests.

If most of the company are young society people she does not burden the company with essays on political or philosophical subjects, or selections from the great dramatists, but sees that the prevailing tone of the program is light and lively. Should she have in the company one who would be shocked by anything approaching to the frivolous in the treatment of religious topics, she is careful that nothing shall be rendered to offend. If one has been unhappy or unfortunate in her marriage relations, that fact is also taken into consideration; and, as she has arranged the program, she is held to accountability for any jars or pain which it occasions.

The same rule applies to the carrying out of a musical program, as a whole, although, of course, the hostess cannot be held responsible for what occurs as the result of encores, in case the participants are not members of her family.

Speaking to this latter point, it should be remarked that it is in bad taste for the hostess to parade the accomplishments of her family before her guests, when she has reason to know that there is other talent in the company which might have added to the general entertainment had it been called into play.

It is also impolite for the hostess, or any member of the company for that matter, to insist that any one shall declaim, read, or render music, when it is evident that there is a disinclination to do so. The refusal may come from the knowledge of one's inability to do justice to the subject, or at least from a feeling of uncertainty as to the result, and is therefore prompted by a desire to save the company

from the embarrassment which springs from the perception of embarrassment in another.

Cards and Other Games.—As a rule, if there is to be any entertaining aside from music, declamation or literary matters, the hostess selects cards as the main feature. If young people are to be present, however, it is thoughtful and courteous to provide other games, such as dominoes, backgammon and checkers.

A very simple game from which the young people may derive much sport is played with the full set of checkers and a common thick glass, or tumbler. The latter is placed in the middle of a large table, the checkers are equally divided between the players and the party is divided into two "sides." The players snap their checkers from the edge of the table, the object being to shoot your opponent's men off the table, or get as near the glass as possible. Every checker which is shot off the table is placed in the glass, where it remains until the end of the inning, counting one point for the side whose player snapped it off. The other points are determined by the number of checkers on each side which are nearest the glass. The game may consist of any number of points determined on, and, with practice, the skill acquired in shooting, or snapping, is quite remarkable.

For the older people some form of euchre or whist is generally decided upon, the nature of the game depending upon individual preferences. It is a bad plan to mix your games—that is, have some euchre tables and some whist; since it is well known that scientific whist players are much annoyed by the noise and chatter which usually accompanies the more lively and perhaps shallow games of euchre. So the hostess should "stick to her text" and it is seldom, now-a-days, that she does otherwise. We can only give this advice to those who wish to be scientific whist players: Commence by carefully studying Hoyle and Pole on the rules of the game.

It should not be forgotten, also, that there are certain observances which constitute the etiquette of whist. Hoyle's Etiquette embraces the following points:

Two packs of cards should be used at regular clubs.

Anyone having the lead and several winning cards to play should not draw a second card out of his hand until his partner has played to the first trick, such being a distinct intimation that the former has played a winning card.

No intimation whatever, by word or gesture, should be given by a player as to the state of his hand, or of the game.

The question "Who dealt?" is irregular and, if asked, should not be answered.

A player who desires the cards to be placed, or who demands to see the last trick, or who asks what the trump suit is, should do it for his own information only, and not in order to invite the attention of his partner.

No player should object to refer to a bystander, who professes himself uninterested in the game and able to decide any disputed question of facts.

It is unfair to revoke (to neglect to follow suit) purposely. Having made a revoke a player is not justified in making a second in order to conceal the first.

Bystanders should make no remark. Neither should they by word or gesture give any intimation of the state of the game until concluded and scored. Nor should they walk around the table to look at the different hands.

There are several variations from the regular game of whist which often furnish agreeable diversions. In French whist, for example, the points in the game are forty instead of ten, the honors count for those who win them and the ten of diamonds, while not played as a trump, counts ten, and is therefore the most important card in the pack to retain.

There are also various forms of euchre besides the regulation game—such as three-handed, set-back and French. The latter game is played with twenty-eight, instead of thirty-two cards, both sevens and eights being discarded. The players bid for the trump and the one who bids the highest must, with the help of his partner, take the majority of the tricks to make the points which he bid; if he is euchred, his opponents count the number of points which he failed to make. Fifteen is the game.

Cribbage is a mild, pleasant game for two, but is going out of vogue, although many elderly people prefer it to any other, and it is well for the hostess to have a board on hand to meet emergencies.

Bézique and pinocle are quite popular with many who seek a diversion from both whist and euchre. The former is ordinarily

played by two persons with a euchre pack of thirty-two cards, the game being 1,000 points, and the following cards or combination of cards counting: ace or ten, taken or saved, 10 points; seven of trumps, played or turned up, 10 points; the last trick, 10 points; king and queen of same suit other than trumps (a common marriage), 20 points; king and queen of trumps (a royal marriage), 40 points; queen of spades and knave of diamonds (simple b  zique), 40 points; four knaves, 40 points; four queens, 60 points; four kings, 80 points; four aces, 100 points; a sequence (quint major), 250 points, and two queens of spades and two knaves of diamonds (double b  zique), 500 points.

Pinocle, which is essentially a German game but becoming quite popular in America, is played with two packs of cards, by retaining only the cards above the eight. Two, three or four persons may play the game, which is for 1,000 points. The points depend on the individual value of the cards won or retained, as well as the combinations of cards. The special values are as follows: ace, 11 points; ten, 10 points; king, 4 points; queen, 3 points; knave, 2 points, and nine, nothing, unless it is turned up as a trump, when it counts 10 points. The combination values are: eight aces, 1,000 points; eight kings, 800 points; eight queens, 600 points; eight knaves, 400 points; two queens of spades and two knaves of diamonds (double pinocle), 300 points; ace, king, queen and knave of trumps, 150 points; four aces of different suits, 100 points; four kings of the same, 80 points; four queens of the same, 60 points; four knaves of the same, 40 points; queen of spades and knave of diamonds (pinocle), 40 points; king and queen of trumps (royal marriage), 40 points; king and queen of suit not trumps, 20 points. The game is won the moment the 1,000 mark is reached, and if a player claims the game before he has actually won it, he forfeits it. The official score is usually kept by an outside party. In making combinations of cards no one card can be used twice.

The game of hearts is also a popular card amusement. It is played with a whist pack, there are no trumps and the object of the game is to avoid taking any trick which contains a heart.

But as card playing is almost as old as civilization, it is obviously impossible to exhaust the subject here, and we can only give a few hints for the benefit of the entertainer.

Novel Entertainments.—In a mixed company, the members of which have quite a diversity of tastes, it is well for the entertainer to fix upon some forms of amusement in which all may join.

A suggestion, which is never followed without causing much interest and amusement, is for the hostess to arrange with those who are to attend the party for their photographs, showing them at their youngest ages. Having been collected the photographs are numbered, and slips having the corresponding numbers are prepared for the expected guests. These slips are distributed, but care is taken that only those numbers shall appear upon them which represent persons actually present. Each guest then endeavors to identify the photographs, writing the name of the person opposite the corresponding number on her slip, the name of the guesser being written at the top of the slip.

If there is time, the hostess may then suggest that, as her friends have guessed as to the earliest photographs, they should have a chance to show their skill at the latest likenesses. Each guest should then be furnished with a sheet of paper numbered at the top, for which there must be a sheet with a corresponding number—that is, there must be two sets of duplicate sheets. Each guest having found his duplicate, the company separates into pairs, each member drawing the likeness of the other to the best of his ability. When all have finished, the drawings are collected and pinned on a curtain, after which each artist identifies as many as possible, the sides of the sheets upon which the drawings are made being numbered consecutively.

These forms of amusement train the eye to detect peculiarities of features or expression, as well as to note details of dress, while others are sometimes provided to test the other senses—such, for example, as that of smell. Get a number of homeopathic vials and place therein long enough so that the fragrance or odor will still cling to them, such substances and liquids as arnica, rose water, peppermint, tobacco, tar, tea, coffee, quinine and sarsaparilla, or anything else which may occur to you, and, having placed the vials on the center table, invite your friends to identify the scents. The differences of opinion as to what they originally contained will be surprising as well as amusing.

In all such cases it adds to the interest, as well as the pleasure of

the company, to provide some simple prizes to be given to the most successful guessers.

The game of Predicaments, although of German origin and not new, is always mirth-provoking and novel to many. The way to play is to whisper a predicament to your right-hand neighbor—for example; "Suppose in entering the church to be married, just as the organ struck up the Wedding March, your nose should commence to bleed—what would you do?" Having stated the predicament you whisper the remedy to the guest on your left, "I should beckon the head usher and request him to state that as I was temporarily indisposed, the ceremony would have to be deferred for a few minutes." It can readily be seen how much amusement will be caused by the coupling of predicaments and remedies which were not intended for each other.

Ingenuity with pencil may afford many novel forms of amusements. A simple suggestion is to provide sheets of paper, which are placed upon a table in an even pile, the leader being provided with six pins. Five of these are held above the pile of sheets, a few feet away, and dropped so that they will not fall off. The sixth pin is used to mark the heads of the other five, the holes being made through the entire pile of sheets. Each guest is then to draw the picture of some animal, the outlines of which shall include one pin hole in the head and one in each of the hands and feet, or feet alone, if the figure be other than human.

Or the artist may commence with the head of any figure, fold the paper over so as to conceal his effort and pass along to the right, for the addition of the body. His right-hand neighbor having completed the body, hands the paper over to the right-hand guest, who adds the lower limbs. When the papers are unfolded, as each artist is ignorant of what his neighbor has done, the results are often extremely grotesque.

A variation from the old-fashioned game of "puss-in-the-corner" is for the players to place their chairs in a circle, one being empty, and the person who is standing in the center endeavor to sit in it. As the rule is for each person to sit in the unoccupied chair to the right, this is often extremely difficult. As the circle of players is continually moving to the right, as rapidly as possible, the game is often called the Whirlwind.

Who Knows That Nose? is played by the audience endeavoring to guess the possessor of the nose, which is thrust through a slit in a curtain. The company before and behind the curtain should be about equally divided, so that the correct guess will not be so easy a matter.

In these days of mind-reading and occult mysteries, the person with a little ingenuity may sometimes astound a party in a very simple fashion—when you know how the trick is done. Each person in the room is asked to write a word, or short sentence, on a piece of paper. The slips are collected in a hat, which is placed on the table before the “mind-reader,” who proceeds to draw one and press it to his forehead, covering it carefully with his fingers. He may make up any word for this first slip and afterward lay the paper, with the writing side up, near the hat. As he proceeds to draw the next slip, he glances at the one he has laid down and, as he presses the second to his forehead, repeats the word or words he has seen on the first; and so on. This trick can usually be successfully played when there are quite a number of persons in the room, so that by comparing notes they will not be likely to discover that the mind-reader has made a sad mistake in repeating the words written on the first slip.

In winter provide yourself with a piece of camphor and you may show the company the astonishing spectacle of a blazing snowball, provided you can slip your camphor into it, unobserved, while packing it into shape. You must be careful to get the camphor near enough to the surface so that it will readily ignite.

If you are with intimate friends and wish to have some innocent fun with one of them, whom you know will take the joke good-naturedly, play Farmyard. Give all your friends the name of some farmyard animal or fowl, including, of course, the donkey. Instruct them all, except the one who is to bray, that at the given signal to commence the “concert” they must be perfectly silent. All being in readiness the signal is given, with the result only of one loud bray.

The above are simple forms of entertainment for young people and those of mature years, whose tastes are varied. It is hoped that they will at least assist our readers to pass many pleasant informal evenings and especially lighten the burdens of those called upon to lead in the entertainment of others.

Outdoor Amusements.—When it comes to the subject of outdoor

amusements, the art of entertaining is a less difficult matter, as the participants naturally feel less restraint and, in the open air, the individual is much more apt to be free and natural. Boating, bathing, horseback riding and bicycling, are open to all, and, of late years, in the large cities, parties are organized, in suitable weather, to take trolley rides. A car is chartered and in some grove, or other pleasure grounds, a luncheon is provided by the entertainer, or, if it is a picnic of the good old-fashioned kind, each brings his quota of edibles.

Croquette, lawn tennis and golf are ever with us through the warm months, and all the changes imaginable, from the church affair to the high-society function, with music, dancing and gorgeously decorated grounds, are rung upon the lawn party itself.

Skating and sleighing parties, ice-boating and tobogganning, with snow-shoe racing and "skeeing" for the more northern sections of the country, and especially the Canadian and Scandinavian elements, constitute popular forms of winter amusements, in which the entertainment depends little on personal management, but rather on individual enthusiasm and favorable external conditions.

CHAPTER XXVII

BUSINESS TRAINING

The Advantage to Everyone of Business Methods—Simple but Approved Ways of Keeping Books—General Entry Book, Day Book, or Book of Original Entry—The Cash Book—List of Common Business Terms with Abbreviations—The Journal and the Ledger—Trial Balances, Closing the Ledger, etc.—Accounts—Aids in Business—General Postal Suggestions—Minimum Weights of Produce.

In America more than in any other country a certain amount of business training is considered to be an advantage to everyone. We have already suggested how the farmer, or other person who does not feel inclined to master standard business methods, may still keep his accounts according to a simple and practical system. There are others, however, whose transactions may be larger and more complicated, who have not been able to attend a commercial college and yet are anxious to clearly understand the principles of business. Having once mastered the simple principles they may readily apply them to individual cases. This is, therefore, an education which not only develops methodical ways and enables one to accomplish a large amount of work with a settled and clear mind, but becomes a spur to originality.

Simple or Complex—Single or Double Entry.—The first thing to be decided is whether the nature of your business requires a simple or a complex system of bookkeeping. If you decide in favor of the former you will adopt the system of single entry bookkeeping—that is, you will have a general entry book, known as the Day Book, or Book of Original Entry, in which you will record all transactions. This will show you how you stand toward any individual or firm with whom you have had any dealings. Be careful to always record dates and particulars, so that if you have other books you will have no difficulty in transferring and classifying the items.

If any mistakes occur, especially if you are an employee and entering the transactions for another person, it is better to make your corrections in red ink than to erase anything.

The Day Book alone is not considered sufficient to properly record business transactions however limited, it being almost impossible to keep it so that prompt information may be obtained either as to the general status of the business or of special accounts.

Besides the Day Book it is considered quite necessary to have a Cash Book, in which is entered items of receipts and expenditures in cash. In case you have a separate Cash Book, these items should not be recorded in the Day Book.

Another important class of items to keep separate from the Day Book includes the sales of the store or farm. This is known as the Sales Book, and when used by the merchant sometimes consists of a copy of the bills which he sends to his customers. The opposite of this is the Invoice Book, in which are recorded all items showing the purchases made.

Supposing, however, that it has been decided to keep only a Day Book and a Cash Book. It must be remembered that in the Day Book every separate transaction must be recorded; there must be no grouping of items, and the amount of each item, whether it be a purchase and an expense (credit) or a sale and a receipt (debit), should be carried out toward the right-hand margin of the book. The common words "bought" and "sold" are used in the Day Book, but when the Cash Book is opened, the debit (Dr.) items should be entered on the left-hand page, or left half of a page, and credit items (Cr.) on the right-hand page, or right-hand half of page.

List of Business Terms, with Abbreviations.—In the course of business transactions many terms and abbreviations are in common use, which to many are at least not clearly understood. For handy reference we give below a list of some of the most common:

Accommodation paper—Credit, or commercial paper advanced.

Accrued—Interest (usually) due, but unpaid.

Account sales—Statement rendered by merchant, or agent, showing net profits from goods sold for another.

Ad lib.—At pleasure.

Ad valorem—According to value.

Assignee—An agent to whom property is assigned to be sold for the benefit of creditors.

Assignor—One who transfers or assigns something to another.

Attachment—Holding of a person or goods by legal means to secure a debt.

Attorney (Power of)—A document by which a person authorizes another to act in his stead.

Auditor—One authorized to adjust accounts.

Bill of exchange—An order from creditor to debtor, by the acceptance of which the latter agrees to pay the former a specified sum upon a certain day.

Bill of lading—A freight receipt given by any transportation agent, and when presented at the point of destination by the shipper, calling for the delivery of goods by the carrier.

Bills discounted—Documents calling for money in the future, from the face value of which bankers have deducted certain sums in return for allowing the holders the cash—minus the discount.

Bills payable—Commercial paper held against others.

Bills receivable—Commercial paper due from others.

Bot.—Bought.

Brot frd.—Brought forward.

Call loan—A secured loan subject to call, or to be repaid at any time.

Carte blanche—Blank paper, excepting a signature, giving one authority to do anything which in his judgment he thinks proper.

C. B.—Cash Book.

Cash credit—Privilege, obtained by deposited security, of drawing cash from a bank.

Certified check—Check certified to, by the bank on which it is drawn, making the bank formally responsible for its payment.

Clearance—Certificate by which the custom authorities allow a vessel to leave port.

Clearing house—Place where banks settle their accounts and differences.

Collateral (coll.)—Security to indemnify a lender, in case the money loaned is not paid.

Collect on delivery (C. O. D.)—Form of bill, which, when so marked, authorizes collection upon delivery of goods.

Consignment (Const.)—The sending of goods to a party for sale.

Consignee—The one to whom the goods are consigned.

Consignor—The one who consigns goods.

Conveyance—The legal paper by which property is transferred.

Coupon—Interest certificate, which is clipped off when payment is made.

D. B.—Day Book.

Days of grace—Three days legally allowed beyond date of payment mentioned in the note.

Debenture—A certificate allowing the seizure of property named in the mortgage, if the conditions mentioned are not carried out.

Del credere—A term by which the credit of the purchaser is guaranteed.

Donee—One to whom a bequest is given, or a gift is made.

Donor—The one who gives or bequeathes.

Dormant—A silent partner.

E. E.—Errors excepted.

Estoppel—A person's act which prevents him from making a given plea, or defense.

Face—Exact sum named in a note.

Factor—One to whom the actual goods are consigned for sale; if he sold by sample the agent would be a broker. In the former case the commission is called factorage; in the latter, brokerage.

Fac simile—An exact copy.

Fee simple—The title by which a person holds an estate in his own right and by which it descends to his heirs.

Free on Board (F. O. B.)—A term implying the delivery of goods by the shipper to the point of destination; a bill or invoice thus marked includes all shipping expenses

Freehold—Land held in fee simple.

Guarantee, or guaranty—A surety for performance of a certain act.

Guarantor—One who makes the guarantee, or stipulations.

Hypothecate—To take as security.

Indemnity—Recompense for injury or loss.

Indenture—An agreement in writing between several parties.

Intestate—Dying without making a will.

I. B.—Invoice Book.

Joint stock—Stock held jointly, as by a company.

Jour.—Journal.

Legal tender—Legal money.

Letter of credit—A letter by which the writer authorizes the holder to receive money on the writer's account.

Lien—A legal claim on property to satisfy a debt.

Liquidation—The settling of accounts, or the paying off of debts.

Manifest—List comprising articles in a ship's cargo.

Margin—The sum deposited with a broker to meet any loss to the investor caused by a decline in stocks.

Maturity—The date when a draft or note is due.

Mortgagee—The person to whom a mortgage is given.

Mortgagor—One who gives a mortgage.

Negotiable paper—Written obligations, such as notes, checks, or drafts, which may be readily transferred.

Open policy—A policy not yet closed, or upon which amounts are to be ascertained and insured.

O. C.—Over charge.

Premium—Payment for insurance.

Prima facie—On the first view.

Protest—A notary's official notice of non-payment of a written obligation.

Pro rata—According to the rate; proportionately.

Prox.—The coming month.

Reversionary interest—An interest in property which reverts to a former owner, either at a certain date or at the death of the holder.

Scrip—Dividends payable in stock.

Set-off—A claim off-setting a debt.

Short exchange—Bills payable at sight, or a few days after being issued.

Silent partner—One who furnishes capital, but whose name does not appear as a member of the firm.

Sinking fund—A fund set apart for the payment of debts.

Ult.—The previous month.

Underwriter—An insurer, or one who underwrites his name to a policy.

Usury—Excess of interest over the legal rate.

Waiver—The relinquishment, or waiving of any right.

The Journal and Ledger.—If it is desired to commence a more complicated system of bookkeeping than is included in running a Day Book and a Cash Book, a Journal may be opened. This is also a

simple matter, after having the principles firmly fixed in mind that expenses and outgoes are on the credit, or right-hand side of the Ledger, and the receipts or incomes on the debit, or left-hand side. This writing of debits and credits is called journalizing, the chief difficulty being in the ability to promptly determine to what accounts to charge the separate items.

In a set of books which aims to be really complete, the Ledger is the most important of all, as here is condensed the net result of the business transactions as well as a summary of all separate accounts. It is in the Ledger that the real science of bookkeeping is demonstrated, and it would, therefore, be presumption here to attempt to go into details as to how it should be properly conducted.

It is from the face of the Ledger that the bookkeeper takes off his trial balance, the most important being of the year, and woe be to him if he has allowed a mistake to creep in. Carelessness in the transfer of items from the Day Book or the Journal to the Ledger may involve the expenditure of hours of labor before they are detected. As a safeguard against errors the taking of trial balances at the end of each month is customary, where the business is large and complicated. When the trial balance is correct, the Ledger is said to be closed, and the bookkeeper breathes a great sigh of temporary relief.

Accounts.—The bookkeeping world divides accounts into two classes, known as Speculative and Non-speculative; the former shows losses and gains, such as Stock and Merchandise; the latter, liabilities and resources, such, for instance, as Bills Receivable and Cash,

Bills Payable Account.—When one issues any written obligation, such as a note, the amount is credited to this account and when he pays it, or meets it, the amount is debited.

Bills Receivable Account.—When one receives a written obligation from another he debits the amount to this account and when transferred, or paid by the original holder, it is credited.

Capital, or Proprietor Account.—This account shows the status of the business toward the capital invested, or the proprietor. When there is more than one partner it is almost necessary to open it at the time of beginning business. The liabilities of any partner are debited and his resources credited.

If he withdraws capital such amount is debited and if he invests new capital it is credited.

Commission Account.—This account is credited with the receipts of commission from the merchant's customers; if he should hire an agent, or other merchant, to aid him in selling goods, and pay the latter a part of his own commission for so doing, that amount would be debited to the account.

Discount and Interest Account.—When one pays discount, or interest, for money borrowed he debits the amount to this account and if he receives discount, or interest, from another he credits it.

Expense Account.—The items in this account include all the running expenses of a business, unless any one class should prove so large as to warrant a subdivision. The merchant, for instance, may buy so many fixtures, or pay out so much for rent or machinery, that he may decide to open a separate account covering those expenses. In that case he only includes those items in Expense Account which he has not otherwise classified. Again, he may travel a great deal, or be obliged to make many personal expenditures in various ways, when he would, if a methodical business man, open a Personal Expense Account.

Loss and Gain (Profit and Loss) Account.—Of course the difference between the credits and debits of this account determines the loss or gain of the business.

Material and Labor Account.—This is a subdivision of the Merchandise Account often made by manufacturers, the charges being for raw material and expenditures of labor on any product.

Real Estate Account.—When a business is greatly expanding this is often a very important account, involving as it does, on the debit side of the ledger, the cost of real estate, with expenditure for repairs and taxes, and on the credit side, the receipts on account of sales and rents.

Sales Account.—Expenses incurred by the commission merchant, or agent, in handling goods are debited to this account and the net proceeds are credited to it.

Store Fixtures Account.—This is separate from the Merchandise Account, since the merchant does not expect to profit by selling the fixtures, and he does not charge them to Expense Account because they possess an intrinsic value.

Business and Partnership Agreements.—For complete self-protection it is absolutely necessary that every business agreement be in writing,

and the closer the friendship the more important is the precaution. The latter may seem like a strange statement and yet we all know that we are all loth to insist upon what might seem like trifles with friends in matters of business, when if we had taken the original precaution to have all points stated in writing there would be little likelihood of a misunderstanding.

If either party to a business agreement misrepresents his financial condition, or otherwise makes fraudulent representations, the contract is not binding, although written, and attested by a notary.

If there are two parties to a business agreement, the paper should be prepared in duplicate and each should have a copy; in fact, as many copies should be furnished as there are parties to it.

Partnerships may be formed, in which the parties put into the business equal or unequal amounts of capital, with their services; or in which knowledge and experience are placed as an offset to capital. In some cases a person may contribute his share of the capital and have a voice in its management, but not appear as a member of the firm, in which case he is a silent partner; on the other hand if he takes no active part in the management, but contributes to the capital and shares the profits, he is called a dormant partner. Each partner, however, whether active, silent or dormant, is liable for the acts or debts of all the others, though contracted in their individual capacities.

AIDS IN BUSINESS

It is strange, but nevertheless true, that many business men, considered quite capable, are ignorant about many things which should be common knowledge. There is no country in the world, for instance, which approaches the United States in the magnitude of its domestic mail operations. Yet the average business man, who is using the mails continually, is quite ignorant about the rates and the details of the postal law governing the mailing of the different classes of matter.

General Postal Suggestions to the Business Man.—The following instructions and suggestions issued by the Post-Office Department should be carefully followed by every business man who wishes to have his mail promptly forwarded:

Mail all letters, etc., as early as practicable, especially when sent

in large numbers, as is frequently the case with newspapers and circulars.

All mail matter at large post-offices is necessarily handled in great haste and should therefore in all cases be so plainly addressed as to leave no room for doubt and no excuse for error on the part of postal employees. Names of states should be written in full (or their abbreviations very distinctly written) in order to prevent errors which arise from the similarity of such abbreviations as, Cal., Col.; Pa., Va., Vt.; Me., Mo., Md.; Ia., Ind.; N. H., N. Y., N. J., N. C., D. C.; Miss., Minn., Mass.; Nev., Neb.; Penn., Tenn., etc., when hastily or carelessly written. This is especially necessary in addressing mail matter to places of which the names are borne by several post-offices in different States.

Avoid as much as possible using envelopes made of flimsy paper, especially where more than one sheet of paper, or any other article than paper, is inclosed. Being often handled, and even in the mail bag subject to pressure, such envelopes not infrequently split open, giving cause of complaint.

Never send money or any other article of value through the mail except either by means of a money order or in a registered letter. Any person who sends money or jewelry in an unregistered letter not only runs a risk of losing his property, but exposes to temptation every one through whose hands his letter passes, and may be the means of ultimately bringing some clerk or letter-carrier to ruin.

See that every letter or package bears the full name and post-office address of the writer, in order to secure the return of the letter, if the person to whom it is directed cannot be found. A much larger portion of the undelivered letters could be returned if the names and addresses of the senders were always fully and plainly written or printed inside, or on the envelopes. Persons who have large correspondence find it most convenient to use "special return envelopes"; but those who only mail an occasional letter can avoid much trouble by writing a request to "return if not delivered," etc., on the envelope.

When dropping a letter, newspaper, etc., into a street mailing-box, or into the receptacle at a post-office, always see that the packet falls into the box and does not stick in its passage; observe, also, particularly, whether the postage stamps remain securely in their places.

Postage stamps should be placed on the upper right-hand corner of the address side of all mail matter.

The street and number (or box number) should form a part of the address of all mail matter directed to cities. In most cities there are many persons and even firms, bearing the same name.

Before depositing any package or other article for mailing, the sender should assure himself that it is wrapped and packed in the manner prescribed by postal regulations; that it does not contain unmailable matter nor exceed in the limit of size and weight, as fixed by law; and that it is fully prepaid and properly addressed.

The postage stamps on all mail matter are necessarily cancelled at once, and the value of those affixed to packages that are afterward discovered to be short-paid, or otherwise unmailable, is therefore liable to be lost to the senders.

It is unlawful to send an ordinary letter by express, or otherwise outside of the mails, unless it be inclosed in a government-stamped envelope. It is also unlawful to inclose a letter in an express package unless it pertains wholly to the contents of the package.

It is forbidden by the regulations of the Post-Office Department for postmasters to give to any person information concerning the mail matter of another, or to disclose the name of a box-holder at a post-office.

Letters addressed to persons temporarily sojourning in a city where the Free Delivery System is in operation should be marked "Transient" or "General Delivery," if not addressed to a street and number or some other designated place of delivery.

Foreign books, etc., infringing United States copyright are undeliverable if received in foreign mails, or mailed here.

The foregoing rates, rules, and suggestions apply to postal matters in the United States.

Domestic Rates of Postage and Money Orders.—The rates and regulations governing domestic postage apply to the United States and its island possessions of Guam, Hawaii, Porto Rico, Tutuila and the Philippines.

First Class.—Letters and all written matter, whether sealed or unsealed, and all matter closed against inspection, either by nailing, sewing, wrapping or in any other manner, so that the contents cannot be removed from the wrapper and returned thereto without muti-

lating either, are subject to first-class rate of postage, 2 cents per ounce or fraction thereof.

Special Delivery.—Any article of mailable matter, bearing a 10-cent special delivery stamp, in addition to the lawful postage, is entitled to immediate delivery on its arrival at the office of address between the hours of 7 A. M. and 11 P. M., if the office be of free-delivery class; and the hours between 7 A. M. and 7 P. M. if the office be other than a free-delivery office. To entitle such a letter to immediate delivery, the residence or place of business of the addressee must be within the carrier limits of a free-delivery office and within one mile of any other office.

Second Class.—On all regular newspapers, magazines and other periodicals issued at stated intervals not less frequently than four times a year, when mailed by publishers, the postage is one cent for each pound. A special rate of one cent for four ounces is made for all second-class matter by other than publishers or newsdealers.

Third Class embraces printed books, pamphlets, circulars, engravings, lithographs, proof-sheets with manuscript accompanying same and all matter of the same general character of personal correspondence. Circulars produced by the mimeograph, hectograph, electric pen and other similar processes of transfer in imitations of hand or type-writing, are mailable at the third-class rate of postage when presented to the post-office or carrier station in not less than twenty identical copies. Rate of postage, one cent for each two ounces or fraction thereof.

Fourth Class.—All mailable matter, like merchandise, not included in the three preceding classes, which is so prepared for mailing as to be easily taken from the wrapper and examined. Rate, one cent per ounce or fraction thereof, except seeds, roots, cuttings, bulbs, plants and scions, which are one cent per two ounces. Limit of weight, four pounds.

Money Order Fees.—For domestic money orders in denominations of \$100 or less, the following fees are charged:

For orders for sums not exceeding \$2.50	3c
For over \$2.50 and not exceeding \$5	5c
For over \$5 and not exceeding \$10	8c
For over \$10 and not exceeding \$20	10c

For over \$20 and not exceeding \$30	12c
For over \$30 and not exceeding \$40	15c
For over \$40 and not exceeding \$50	18c
For over \$50 and not exceeding \$60	20c
For over \$60 and not exceeding \$75	25c
For over \$75 and not exceeding \$100	30c

Minimum Weights of Produce.—Country merchants will be interested to know the minimum weights of the following articles, as fixed by the laws of the United States:

Barley	48 pounds per bushel
Blue grass seed	44 " " "
Bran.	20 " " "
Buckwheat	48 " " "
Castor beans	46 " " "
Clover seed	60 " " "
Corn, in the ear	70 " " "
Corn, shelled	56 " " "
Corn-meal	48 " " "
Dried apples	26 " " "
Dried peaches	33 " " "
Flax seed	56 " " "
Hemp seed	44 " " "
Hungarian grass seed	50 " " "
Malt	34 " " "
Millet seed	50 " " "
Oats	32 " " "
Onions	57 " " "
Peas	60 " " "
Peas, ground	24 " " "
Salt (State laws), coarse, 50 to 80	" " "
Salt (State laws), fine	55 to 62 " " "
Sweet potatoes	55 " " "
Timothy seed	45 " " "
Turnips	55 " " "
Wheat	60 " " "
White beans	60 " " "
White potatoes	60 " " "

INDEX

A	Page
A Practical Spring Remedy.....	74
Accounts (Bookkeeping).....	616
Bills Payable.....	616
Bills Receivable.....	616
Capital or Proprietor.....	616
Commission.....	617
Discount and Interest.....	617
Expense.....	617
Loss and Gain (Profit and Loss).....	617
Material and Labor.....	617
Non-speculative.....	616
Real Estate.....	617
Sales.....	617
Speculative.....	616
Store Fixtures.....	617
Address, Official Forms of.....	598
Agreements, Business.....	618
Partnership.....	618
Almond Dainties.....	278
Pudding.....	278
Alum Water (Hot) for Insects.....	104
Angora Goat, Good Qualities of.....	542
Ant Hills, to Destroy.....	362
Antidotes for Poisons.....	55
Antiseptics.....	39
Apple Conserve.....	266
Dumplings.....	264
Omelet.....	265
Pudding.....	264
Sauce.....	263
Shortcake.....	264
Souffle.....	265
Trifle.....	265
Apple Orchard, Grafting.....	426
Planting.....	425
Apple Punch (Hot).....	293
Water.....	297
Apple and Crabapple Jelly.....	290
Apples (Cooking of).....	262
Baked.....	263
Canned, Fried.....	266
with Corn-starch.....	265
and Honey.....	265
and Lemon.....	265
Scalloped.....	264
Suggestions for Cooking.....	266
Apples (Raising of).....	425
Assorting.....	427
Cold Storage.....	429
Packing.....	428

Apples—Continued.	Page
Picking.....	427
Storing for Winter.....	428
Apricots with Cherries.....	272
Art of Receiving and Entertaining....	599
Asparagus, Growing.....	389
Properties of.....	203
Ashes Help Growth of Young Trees... 420	

B

Baby, How to Keep It Well.....	52
Baby Etiquette.....	591
Baby's Underwear, How to Wash.....	112
Bad Breath, How to Cure.....	67, 305
Bacteria.....	35
Bagging the Ripening Grapes.....	404
Baked Pear Pudding.....	271
Baking Bread.....	236
Banana Boats.....	281
Cream.....	280
Souffle.....	280
Sponge.....	281
Bananas, Baked with Cream.....	280
Boiled.....	281
and Cream.....	280
Banbury Cakes.....	234
Barley.....	356
Bath Cabinet (Home-made).....	316
Bathing, Suggestions on.....	26, 315
Baths in Sickness.....	48
Bavarian Cream, Chestnut.....	279
Coffee.....	274
Bean Pickles.....	197
Soup.....	161
Beans (Cooked).....	216
Boston Baked.....	216
Croquettes.....	217
Curry of.....	217
Fresh.....	204
Lima.....	217
Rarebit.....	217
Bedbugs, Destroyed.....	136
Bedding for Winter and Summer.....	134
Bedrooms, Ventilation of.....	30
Bed Sores.....	48
Beds and Bedding.....	26
Bee and Wasp Stings, How to Soothe Them.....	57
Beef.....	174
Balls.....	176
Boeuf aux liqueurs.....	175

	Page		Page
Beef—Continued.		Bonbons.....	292
Chipped.....	176	Bone Meal as a Fertilizer.....	334
Frizzled.....	175	Book of Original Entry.....	611
Hamburg Steaks.....	176	Bookkeeping, Accounts.....	616
Hash.....	176	Book of Original Entry.....	611
Mock Duck.....	176, 177	Cash Book.....	612
Pie.....	174	Day Book.....	611
Pot Pie.....	177	Journal.....	615
Pot Roast.....	177	Ledger.....	616
Ragout of.....	175	Sales Book.....	612
Beef (100 pounds), Curing of.....	189	Trial Balance.....	616
Beef Soup.....	158	Books, How to Clean.....	103
Bees, Food of.....	558	Borax for Insect Bites.....	58
Foul Brood of.....	565	as a Medicine.....	50
Handling.....	556	Borers, a Farmer's Way to Kill.....	434
Italian, the Best Variety.....	554	Apple Tree.....	434
Old and New Ways of Raising.....	555	Peach.....	435
Spring Dwindling.....	563	Boston Bean Croquettes.....	217
Watering.....	558	Bots in Horses.....	487
Wintering.....	560	Bowel Diseases, Boiled Milk for.....	75
Bees, Honey and Wax.....	554	Brandy Sauce for Pudding.....	286
Beeswax, How Extracted.....	568	Brass, How to Make Black Finish on.....	96
Beet, Qualities of.....	204	Bread, Making and Baking.....	236, 237
Relish.....	195	Bread Griddle Cakes.....	251
Belgian Hare, Roast.....	187	Sticks.....	241
Benzine as a Moth Destroyer.....	105	Tarts.....	275
Berries, Growing.....	396	Bread Used to Clean Wall Paper.....	108
Beurre Noir.....	188	Bread and Biscuits, Temperatures for.....	156
Beverages.....	293	Bread, Muffins, Cake and Desserts.....	236
Bézique.....	605	Breakfast Cereals.....	228
Bills Payable.....	616	Dishes.....	183
Receivable.....	616	Breakfasts.....	603
Bird and Insect Pests.....	358	Breeding Poultry.....	458
Birds, Care of.....	544	Brood Mare, Periods of Gestation.....	482
Birds Should Be Protected.....	432	Brooder for Chickens, Best.....	462
Biscuits, Drop.....	233	Broom Corn.....	352
Soda.....	234	Brooms, How to Make Them Last	
Tea.....	233	Longer.....	106
and Rolls.....	233	Brown Sauce.....	188
Black Ants, How to Destroy.....	433	Bruise, Best Treatment for.....	59
Blackberries, Growing.....	400	Bruises, Splinters, Cuts and Burns.....	59
Blackberry Juice, to Preserve.....	295	Bugs on Vegetables, Saltpeter for.....	413
Black Eye, How to Take the Color from.....	65	Burns and Their Treatment.....	59
Black Finish on Brass.....	96	Business Agreements.....	617
Blackheads, How to Remove.....	301	Aids.....	618
Black Inks, Recipes for.....	82	Terms.....	612
Black-knot Fungus.....	437	Training.....	611
Blackleg, Vaccination as a Preventive.....	500	Butter, Don't Overwork.....	508
Black Rot in Cabbage.....	381	Packing for Winter Use.....	508
Blankets, Easy Way to Clean.....	136	Butter Making and Its Secrets.....	506
What to Do with Worn-out.....	135	Buttered Shrimps with Eggs.....	167
Bleaching Flannels with Sulphur.....	112	Butternut Sauce.....	188
Blind Staggers.....	487		
Blue Luminous Paint.....	85		
Body and Bed Clothing, Treatment of,			
in Infectious Diseases.....	41		
Body-blight.....	439		
Boiled Milk for Bowel Diseases.....	75		
Boils and Carbuncles, How to Treat			
Them.....	69		

C

Cabbage.....	212
Baked.....	212
Escalloped.....	212
Salad.....	201
Cabbage Worm.....	416

	Page
Cabbages, How to Keep.....	379
Varieties of.....	204
Cake.....	242
Buttercup.....	243
Cherry Sponge.....	247
Chocolate (Pittsfield).....	245
Chocolate Eclairs.....	246
Chocolate Fritters.....	247
Christmas Fruit.....	243
Cream.....	245
Farmers' Fruit.....	244
Fig.....	244
Frosting for.....	248
Hominy.....	246
Icing (White), for.....	248
Jumbles.....	247
Marshmallow.....	248
Molasses.....	244
Orange.....	245
Potato Caramel.....	246
Rich Fruit.....	243
Roll Jelly (Grandmother's).....	244
Sally Lunn.....	247
Sunshine Cake.....	245
Calling Etiquette.....	583
Calves, Teaching How to Drink.....	498
What, When and How to Feed.....	497
Calving Cows, Oats for.....	496
Canary Birds, Care of.....	545
Food for.....	547
Mating of.....	546
Cancers, Tumors, etc., Treatment for.....	303
Candy, Fudges.....	292
Hickory Nut.....	292
Molasses Taffy.....	292
Peanut.....	292
Canned Fruit, Keeping.....	290
Canning (Fruit).....	288
Apples.....	289
Blackberries.....	289
Peaches.....	289
Pears.....	289
Plums.....	289
Canning, (Vegetables).....	290
Beans.....	291
Corn.....	290
Corn and Tomatoes.....	291
Peas.....	291
String Beans.....	291
Tomatoes.....	291
Capital or Proprietor Account.....	616
Caramel Sauce for Pudding.....	285
Carbolic Acid.....	39
Carbuncles, How to Treat Them.....	69
Cards, Use of.....	584
Cards and Other Games.....	604
Care of the Eyes.....	304
Farm Machinery.....	324
the Lawn.....	409
the Mouth.....	305

	Page
Care of the Patient.....	46
the Sick Room.....	37
Carpets, How to Clean, on the Floor.....	104
Carrot, Qualities of.....	204
Carrots, Baked.....	214
Croquettes.....	214
Fritters.....	214
Cash Book.....	612
Casserole of Rice with Calves' Brains.....	185
and Meat.....	185
and Tomato.....	223
Castor Bean, Growing.....	386
Castor Oil—Making It Easy to Take.....	74
Cathartics for Poisons.....	55
Cats, Diseases of.....	551, 552
Cattle, Beef.....	489
Dairy.....	492
Dehorning.....	490
Diseases of.....	499
Catsups, Recipes for.....	191
Cauliflower (Prepared).....	212
au Gratin.....	213
Boiled.....	212
Cauliflowers, Raising.....	381
Celery, Growing.....	390
Celery (Prepared).....	221
au Jus.....	221
Minced, with Egg.....	221
Qualities of.....	204
Salads.....	201
Cellar for Cooling Milk.....	507
Cellar Mold, Sulphur for.....	90
Cement for Fastening Wood to Stone.....	80
Gas and Steam Pipes.....	80
Rubber or Leather.....	79
Various Substances.....	81
Cereal Loaf.....	241
Chalk Dust in the Hair (for Teachers).....	310
Chapped Hands, Lotion for.....	312
Characteristics of Fever.....	49
Charcoal for Chickens.....	451
to Make.....	327
Cheese Cakes.....	233, 241
Croquettes.....	233
Fingers.....	241
Nut Salad.....	201
Sauce.....	232
Souffle.....	232
Welsh Rarebit.....	233
Cheese Making, Factory.....	511
Home.....	510
Cherries, Growing.....	432
Cherry Sponge Cups.....	247
Cherry Stain for Woodwork.....	93
Chervil, Growing.....	395
Chestnut, Bavarian Cream.....	279
Ice-cream.....	278
Purée.....	278
Salad.....	202
Sandwiches.....	228

	Page		Page
Chestnuts, Scalloped.....	228	Clams— <i>Continued.</i>	
Chicken.....	168	Pie.....	167
à la Baltimore.....	168	Squares.....	167
Croquettes.....	171	Cleaning Kid Gloves.....	122
Deviled.....	169	Cloth Made Fireproof.....	99
Fricassee (with Rice).....	170	Made Waterproof.....	99
Fried.....	169	Clothing, How to Remove Spots from.....	119
Giblet Sauce for.....	171	Its Relation to Health.....	24
Hollandaise.....	170	Clover and Timothy Crops.....	340
Mock Oysters with.....	169	Clover Bloat in Cattle.....	499
Pan.....	170	Coal Oil for Cleansing.....	103
Panada.....	171	Cockerels, Caponizing and Fattening.....	465
Soup.....	158	Cocklebur, How to Get Rid of It.....	348
Turnovers.....	173	Cockroaches, How to Remove.....	104
Chicken Cholera.....	466	Cocktails (Egg).....	293
Chicken Feathers.....	464	Cocoanut Beverage.....	297
Chicken Meat, Cost of Producing.....	464	Codfish, Boiled (Salt).....	164
Fattening Cockerels.....	465	Fried.....	164
Chicken Wing, Use for.....	108	Codlin Moth.....	438
Chickens.....	442	Coffee Bavarian Cream.....	274
Breeds.....	446	Coffee Cake.....	235
Brooder.....	462	Coffee Drinkers, Advice to.....	316
Chicks and Their Care.....	462	Coffee Pots Must Be Clean.....	133
Cleanliness.....	444	Cold Baths.....	27
Diseases and Pests.....	465	Cold Water for Common Recent Burns.....	60
Egg-eaters.....	454	Commission Account.....	617
Exercise.....	443	Color Destroyed by Acid, How to Re- store.....	123
Fall Feeding.....	448	Color of Clothing, Relation to Health.....	25
Food.....	443	Colored Crayons from Dyes.....	84
Hen and Brood.....	459	Inks.....	84
Incubator.....	460	Pencils.....	84
Shade in Summer.....	443	Colt, Educating.....	484
Water.....	443	Fall.....	483
Winter Food.....	451	First Year.....	483
Winter Poultry House.....	449	Commercial Side of Dairying.....	513
Chickens and Eggs.....	442	Common Recent Burns, Cold Water for.....	60
Chicory with Cream Sauce.....	216	Common Sense in the Sick Room.....	44
Chili Sauce.....	192	Complexion, How to Care for.....	298
Chinch Bugs, Exterminating.....	360	Brush.....	299
Chloride of Zinc.....	39	Florid.....	300
Chocolate Cream.....	276	Powder.....	300
Eclairs.....	246	Rough.....	302
Fritters.....	247	Convalescent Patient, Food for.....	46
Sauce.....	285	Condensed Rules for Emergencies.....	54
Chocolate Pudding, Creole.....	276	Consumption (Tuberculosis), How to Guard Against.....	36
Steamed.....	277	Milk Strippings for.....	76
Choking, How to Treat.....	54	Contagion, How Communicated.....	35
Chopped Dates with Apple Sauce.....	284	How to Prevent.....	35
Pickle.....	198	Conversation, Art of.....	596
Chopping Bowls, How to Keep from Splitting.....	113	Cookies, Caraway.....	248
Chow-chow.....	196	Cocoanut.....	248
Christening Etiquette.....	591	Cream.....	248
Christmas Caraway Cakes.....	248	German Christmas.....	249
Churn, How to Keep Flies Out of.....	134	Ginger Snaps.....	249
Cider, How to Keep.....	266, 296	Orange.....	248
Pudding.....	267	Cooking, Degrees of Heat for Best.....	155
Spiced Apples with.....	267	Copying Ink from Dyes.....	84
Cistern to Be Kept Clean.....	321		
Clams, Luncheon.....	167		

	Page
Cold and Frost, How They Improve the Soil.....	336
Corn, Preparing Sod Land for.....	339
Corn Bread.....	240
Pumpkin.....	240
Rice.....	240
Corn Gems.....	240
Corn-meal Recipes.....	239
Corn Pickle.....	197
Corn Soup.....	159
Corn-stover, Care of.....	351
Corn and the Corn Field.....	345
Corns and Corn Cures.....	68
Corpses, Treatment of, in Infectious Diseases.....	42
Correspondence (Social), Art of.....	594
Cosmetic Jelly for the Hands.....	312
Rough Skin.....	302
Cotton Seed Meal as a Fertilizer.....	333
Cotton Goods, Washing, Without Fad- ing.....	122
Cotton and Linen Clothing.....	25
Cow-pea as Hay Producer.....	344
Cranberry Jelly.....	283
Pudding.....	282
Soy.....	283
Cracked Hands, Copal Varnish for.....	311
Cracks in Plaster, How to Fill.....	97
in Wooden Floor.....	97
Cream Combination Soup.....	160
Cream of Tartar a Mild Cathartic.....	74
Cream of Celery Soup.....	160
Creamed Bologna.....	183
Creamed Fish.....	164
Creamed Potatoes and Ham.....	182
Creams and Custards.....	273
Crecy Soup.....	162
Cresses, Growing.....	396
Crop-bound Hen.....	468
Crowd Out Weeds with Turnips.....	374
Cucumber, Qualities of.....	204
Cucumber Bugs (Striped).....	416
Cucumbers, Stewed, on Toast.....	226
Cucumbers and Sweetbread Salad.....	226
Curculio.....	438
Curing Meats.....	189
Pork.....	523
Skins of Small Game.....	363
Curling Iron, Use of.....	307
Custard Cups.....	274
Macaroni.....	274
Magic.....	274
Pudding.....	273
Cut, How to Treat.....	59
Cut Artery, How to Compress.....	54
Vein.....	54
Cut Bone for Chickens.....	451
Cut Flowers, Keeping Fresh.....	145
Cuttings, How to Grow.....	410
Cutworms.....	417

	Page
D	
Dairy.....	505
Dairy Cow, Best.....	492
Don't Excite.....	494
Drying Up.....	495
Food for.....	492
Kicking.....	495
Dairying, Commercial Side of.....	513
Damp Sheets, Danger in.....	70
Dandruff.....	307
Dark Rings under Eyes, to Remove.....	304
Date Apple Sauce.....	263
Bread.....	284
Confection.....	284
Gems.....	284
Pudding.....	284
Puffs.....	285
Sandwiches.....	284
Dates and Figs.....	283
Day Book.....	611
Dead Hair.....	308
Decorating the Thanksgiving Table.....	127
Deep and Shallow Plowing.....	339
Degrees of Heat for Best Cooking.....	155
Delicate Fabrics, How to Clean.....	117
How to Do Up.....	118
Deodorants.....	39
Deviled Fish.....	163
Dining-room, Kitchen and Bedroom.....	125
Dining-room "Handy" (Cabinet).....	128
Dinners, Etiquette at.....	602
Diphtheria, Tar and Turpentine for.....	70
Dirty Barrel, How to Clean It.....	98
Disagreeable Breath, How to Cure.....	67
Discount and Interest Account.....	617
Diseases, Classification of.....	34
Dish Towels in Abundance.....	132
Disinfectants, Lime and Charcoal as.....	73
Chloride of Lime as.....	73
Disinfection, Its Importance and Methods.....	39
Dogs, Care of Young.....	550
Diseases of.....	551
to Tell Age by Teeth.....	550
Washing White.....	551
Double Service for Stair Carpets.....	106
Doughnuts Not Greasy.....	249
Sugar.....	249
Dress, Harmonizing Colors in.....	577
to Make Work Easier.....	138
Drop Cakes (Eggless).....	247
Drowned, How to Revive the.....	61
Dry Scab on Cattle.....	499
Drying the Face.....	315
Duck (Roast) with Apples.....	173
Ducks, Water and Food for.....	473
Dumplings, Never Failing.....	242
Norfolk.....	242
Togus Loaf.....	242
Yorkshire Pudding.....	242

	Page
Dust from the Eyes, How to Remove..	54
Dyes and Dyeing.....	85

E

Ear, How to Remove Insects from.....	66
Earache, Quick Relief for.....	66
Easy Way to Clean Windows.....	101
Eczema, Simple Cure for.....	303
Egg Anchovy Sauce.....	188
Chops.....	230
Omelets.....	231
Recipes.....	230
Soup.....	162
Suggestions.....	229
Egg-eaters, How to Cure.....	454
Egg-plant.....	218
Escalloped.....	219
Fried.....	218
Fritters.....	218
Stewed.....	218
Stuffed.....	218
Egg Shampoo for the Hair.....	310
Egg Tester.....	458
Eggs, Boiled (Cooked).....	230
Fried.....	230
on Toast.....	230
To Take Stains from.....	230
Eggs, Care of (Fresh).....	455
Detecting Bad.....	230
Effect of Food on.....	452
for Hatching.....	459
Preservatives for.....	456
Tester for.....	458
Elderberry Wine.....	296
Egyptian Coffee.....	294
Electricity as a Crop Stimulant.....	337
Elephant Leg (see Elephantiasis).....	486
Elephantiasis (Elephant Leg).....	486
Emergencies, Condensed Rules for.....	54
Emetics for Poisons.....	55
Endemic Diseases.....	34
Enemies of the Orchard.....	433
English Bun Loaf.....	234
Ensilage.....	349
Escalloped Fish.....	165
Noodles and Oysters.....	166
Erasing Ink with Chemicals.....	83
Etiquette, Baby.....	591
Calling.....	583
Christening.....	591
Funeral.....	593
Home.....	586
Party.....	588
Rainy-Day.....	579
Street (for Men).....	581
Street (for Women).....	577
Street-car.....	581
Table.....	587
Visiting.....	582
Wedding.....	592

	Page
Etiquette (<i>Continued</i>), Whist.....	604
Euchre, French.....	605
Ewes and Lambs.....	534
Expense Account.....	617
Eye, How to Remove Bits of Dirt from.....	65
Eyebrows, Care of.....	305
Eye Disease (see Ophthalmia) in Cattle.....	499
Eyelashes, to Help Growth of.....	305
Eyes, Care of.....	64, 304

F

Facial Eruptions, How to Cure.....	301
Faded Green Blinds, How to Renew..	102
Faded Plush, to Brighten.....	122
Ribbons.....	121
Fainting, How to Treat.....	63
Fall Foal.....	483
Family Wardrobe, Managing.....	138
Farina.....	228
Farm, How to Fertilize.....	330
Farm Crops, Varied.....	356
Farm Fencing.....	322
Farm Hygiene and Common Dirt.....	321
Farm Machinery, Care of.....	324
Farm Pump, Home-made Wind Engine.....	327
Farm Reading.....	320
Farmers Accounts.....	319
Telephone Lines.....	319
Farmyard, Game of.....	609
Fatal to all Insects.....	413
Feather Beds, Cleaning.....	136
Feather Business.....	470
Feet, How to Care for.....	313
Felons and Their Treatment.....	68
Fence Posts, Rails, etc., Preservation of.....	325
Ferns (Growing) for Table Pieces.....	145
Fertilizers, Commercial.....	368
Direct, or Nutritive.....	330
Indirect, or Stimulant.....	335
Fever, Characteristics of.....	49
Fever Patients, Relish for.....	75
Fig Custard.....	285
Pudding.....	285
Filter for Farm Use.....	322
Finger-nails, Care of.....	312
Finnan Haddie (Baked).....	163
(Boiled).....	163
(à la Delmonico).....	163
Fire, How to Smother.....	54
Fire Escape.....	91
Fireproof Ink.....	84
Cloth.....	99
Curtains.....	99
Paper.....	84
Shingles.....	91
Wood.....	92
Fish Chops.....	165
Fish, Filling for.....	164
Fish Casserole.....	165
Chops.....	165

	Page
Fish (<i>Continued</i>), Filling.....	164
Sauces.....	188
Fish, Meat and Soup Recipes.....	153
Flannels, How to Iron.....	113
How to Wash.....	110, 111
Fleece of Wool, Most Marketable.....	538
Flies, How to Drive Away.....	90, 488
Florid Complexions.....	300
Flower Seeds, How to Water.....	146
Flowering Shrubs, Layering.....	410
Foamy Sauce for Pudding.....	286
Foul Water, How to Purify.....	73
Food, How to Keep, from Spoiling.....	156
Food Values and Nourishment.....	154
Foot Rot in Sheep.....	541
Farm, How to Perfect.....	313
Foul Brood of Bees.....	565
Founder.....	487
Freckles, to Remove.....	302
Freezing and How to Treat It.....	64
French Pickles.....	106
Frosting for Cake.....	248
Frowning, How to Cure.....	304
Fruit, as an Antidote for Intemperance.....	76
When and Why to Eat.....	75
Fruit Cake, Christmas.....	243
Farmer's.....	244
Rich.....	243
Fruit Cream Sauce for Pudding.....	286
Fruit Flavors, How to Blend.....	286
Fruit Jars, Care of.....	290
Fruit Juices, How to Preserve.....	295
Fruit Pudding Sauce.....	286
Fruit Salads.....	202
Fruit Sandwiches.....	275
Fruit Stains Removed from Clothing.....	119
Linen.....	120
Fruits as Food.....	24
with Medicinal Properties.....	50
Frying, Rules for.....	156
Fumigation.....	41
Funeral Etiquette.....	593
Furniture (Broken), How to Save.....	94
Furniture Polish.....	93
G	
Game, Recipes for Cooking.....	186
Game of Bézique (Cards).....	605
Farmyard.....	609
French Euchre.....	605
French Whist.....	605
Hearts (Cards).....	606
Pinocle (Cards).....	606
Predicaments.....	608
Whirlwind.....	608
Who Knows That Nose?.....	609
Gapes in Young Fowls.....	467
Garden.....	365
Draining.....	366
Fertilizing.....	367

	Page
Garden (<i>Continued</i>), Planting.....	366
Watering.....	367
Weeding.....	374
Garden Tools.....	370
Garget in Milch Cows.....	503
Geese.....	475
Gem Melons, Raising.....	406
General Health Conditions.....	31
General Household Recipes.....	100
German Toast.....	253
Germicides.....	39
Giblet Sauce, Chicken.....	171
Spiced.....	174
Ginger Beer.....	294
Gingerbread, Almond.....	250
Fairy.....	250
Molasses.....	250
Ginger Snaps.....	249
Ginseng and Peanuts.....	411
Girls, (Little), Teaching to Sew.....	142
Winter Clothing for.....	141
Glanders.....	487
Glass, How to Polish.....	109
Glass Bottles, Made Clean.....	110
Glass Cut, How to Relieve.....	58
Glazed Peach Pudding.....	268
Glue and Cement Recipes.....	80
Glycerine for the Hands.....	311
Goats, a Word for.....	542
Gold Fish, Care of.....	552
Good Digestion, a Word Concerning.....	73
Gooseberries, Growing.....	401
Gooseberry Shrub.....	297
Grafting Wax.....	427
Graham Bread.....	239
Gems.....	239
Grain Weevil, Destroying.....	360
Grains as Food.....	23
Grape Apple Butter.....	282
Marmalade.....	282
Mush.....	282
Salad.....	202
Wine.....	295
Grape Culture.....	402
Grapes, Bagging.....	404
How to Keep.....	281
Grass Crops.....	341
Gray Luminous Paint.....	86
Grease Spots Removed.....	119
Taken from Wallpaper.....	108
Green Ink, Recipe for.....	82
Luminous Paint.....	85
Green Manuring, Advantages of.....	332
Green Pea Soup.....	160
Green Pepper Salad.....	226
Green Peppers, Stuffed.....	225
Stuffed with Mushrooms.....	226
Green Tomato Pickle.....	198
Pie.....	212
Sauce.....	191

	Page
Greens (see Salad Vegetables).....	395
Griddle Cakes, Bread.....	251
Pumpkin.....	252
Groceries Not to Be Left in Paper Bags.....	132
Ground Glass Windows, Substitute for.....	95
Ground Mice, to Treat Trees Wounded by.....	440
Guard Your Water Supply.....	33
Guinea Fowls (Larded).....	174
Gums, How to Keep Healthy.....	305
Gunpowder Burns, How to Treat.....	60
H	
Haddock (Baked Fresh).....	163
Hair, Brushing.....	307
Combing.....	307
Dressing.....	309
Dyes.....	309
Tonics.....	310
Washing.....	306
Hair Brushes and Combs, to Clean.....	137
Ham (100 pounds), Curing of.....	189
Ham, Potted.....	183
and Creamed Potatoes.....	182
and Eggs.....	182
Salad.....	200
(San Juan) and Eggs.....	182
Hamburg Steaks.....	176
Hand Hoe, Care and Use of.....	371
Handkerchiefs (School), Making.....	142
Hands, Cleaning Dirty.....	311
Reducing Fat.....	312
Stains Taken from.....	311
Hard Soap, Recipes for.....	88
Hard Water, How to Make It Soft.....	88
Harness Polish.....	99
Hash, German.....	184
Senator Hanna's.....	184
West Indian.....	184
Hats, How to Clean Properly.....	140
Hay Making.....	342
Heaves.....	487
Health and Its Universal Interest.....	17
Hedge Fences, How to Kill.....	326
Hellebore Powder as an Insecticide.....	414
Herbs as Household Remedies.....	50
Hiccoughs—A Simple Cure.....	68
Hog Cholera.....	524
Hogs.....	516
Breeds.....	526
Diseases.....	524
Exercise.....	518
House.....	517
Mixed Rations.....	521
Warm Food in Winter.....	523
Water.....	518, 521
Home Etiquette.....	586
Home Remedy for Consumption.....	76
Home-made Beverage.....	293
Filter.....	134

	Page
Home-made Wind Engine as a Pump..	327
Hominy Patties.....	228
Honey, an Aid to Digestion.....	566
Artificial.....	568
Clarifying.....	568
Comb.....	566
Extracted.....	567
Horseradish, Qualities of.....	205
Growing.....	390
Horses.....	477
Doctoring.....	485
Farm.....	477
Food and Feeding.....	478
Hair and Hoofs, Care of.....	481
Protect from Cold.....	480
Water and Watering.....	479
Hot Beet Salad.....	201
Hot Weather Bath Suggestion.....	28
Drink.....	295
Hours of Sleep Required.....	28
House Plants, Suggestions About.....	142
Housecleaning, Rules for.....	100, 101
Household Mucilage.....	81
Household Pets.....	544
Housework, Dress to Make It Easier.....	138
How to Make It Easier.....	129
How Cold and Frost Improve the Soil..	336
Diseases are Classified.....	34
How to Avoid Contagion in the Sick Room.....	72
Bake Pastry.....	155
Blend Fruit Flavors.....	286
Bring the Drowned to Life.....	61
Build a Silo.....	350
Care for the Complexion.....	298
Care for the Feet.....	313
Care for the Hair.....	306
Clean Carpets on the Floor.....	104
Clean Hats Properly.....	140
Clean Delicate Fabrics.....	117
Clean Oil Paintings.....	102
Clean Spotted or Old Books.....	103
Clean Straw Matting.....	106
Clean Tarnished Tin.....	132
Clean and Keep Fine Laces.....	116
Clear Out Cockroaches.....	104
Cook Roasts.....	155
Cure a Bad Breath.....	305
Destroy the Mole.....	417
Do Up Delicate Fabrics.....	118
Do Up Lace Curtains.....	115
Drive Away Flies.....	488
Fasten Iron in Stonework.....	96
Fertilize the Farm.....	330
Fill Cracks in Plaster.....	97
Fill Cracks in a Wooden Floor.....	97
Freshen and Preserve Oilcloth.....	106
Fry.....	156
Harden Lamp Chimneys.....	94
Harden Steel.....	96

	Page
How to Keep Afloat (<i>Continued</i>).....	63
Keep the Baby Well.....	52
Keep Chopping Bowls from Splitting.....	133
Keep Wood from Splitting.....	99
Make Brooms Last Longer.....	108
Make Hard Water Soft.....	88
Make Holes in Plate Glass.....	95
Make Holes in Steel.....	95
Make Housework Easier.....	129
Make Ironing Easier.....	115
Make Jams.....	289
Make Jellies.....	289
Make New Rope Limber.....	90
Make Oilcloth Wear Well.....	107
Make a Rose Jar.....	148
Make White Skirts Stiff.....	114
Measure for Recipes.....	157
Mend a Paper Pail.....	97
Paper a Room.....	107
Patch Shoes with Cement.....	79
Perfect the Form.....	313
Preserve Wood from Decay.....	92
Prevent Contagion.....	35
Prevent Pitting in Smallpox.....	71
Purify Foul Water.....	73
Reduce the Flesh.....	314
Relieve Cut Made by Glass.....	58
Remove Bits of Dirt from the Eye.....	65
Remove Stains from Furniture	94
Remove Stains from Marble.....	97
Renew Rusted Stovepipe.....	133
Restore Color Destroyed by Acid.....	123
Restore the Finish to Old Goods.....	120
Revive a Fainting Person.....	63
Stop Nosebleed.....	67
Take the Color from a Black Eye.....	65
Take Ink Stains Out of Carpets.....	105
Take Old Varnish from Furniture.....	94
Treat a Sprain.....	58
Treat Smutty Grain.....	357
Wash the Baby's Underwear.....	112
Wash Cotton Goods without Fading.....	122
Wash Towels Easily.....	113
Human Body and Its Construction.....	20
Humus and How to Supply It.....	331
I	
Ice and Iced Drinks.....	24
Ice Chest, Care of.....	103
Ice-houses for the Farm.....	329
Iced Pineapple.....	272
In the Sick Room.....	40
Indelible Ink, Recipe for.....	82
Index, Look at.....	154

	Page
Indian Hash.....	173
Indian Pudding, Apple.....	262
Baked.....	261
Pumpkin.....	261
Infectious Diseases, How Classified.....	34
Periods of Isolation.....	43
Inflamed Eyes, Lotion for.....	305
Face.....	303
Ink, How to Keep from Molding.....	83
Recipes for.....	82
Ink Spots, How to Remove, from Carpets.....	105
Clothing.....	119
Linen.....	120
Insects from the Ear, How to Remove.....	54, 66
Insects on Animals, Destroying.....	362
Plants.....	362
Insect Bites, Borax for.....	58
Simple Remedy for.....	58
Insect Pests on the Farm.....	360
in the Garden.....	413
Intemperance, Fruit as an Antidote for.....	76
Introductions, Forms of.....	601
Invitations, Forms of.....	599
Iron Cement.....	80
Iron Rust, How to Remove.....	120
Ironing, Suggestions About.....	114
Irrigation for the Farm.....	328
Isolation or Quarantine, Period of.....	43
Invisible Inks, Recipes for.....	83
J	
Jams, How to Make.....	289
Japanese Cement from Rice.....	80
Jellies, How to Make.....	289
Jelly, Best Protection for.....	290
Jersey Bull, Training.....	495
Jimson Weed, How to Kill.....	363
Journal.....	615
Jumbles.....	247
Juvenile Soup.....	160
K	
Kalsomine, Recipe for.....	87
Keeping Food from Spoiling.....	156
the Horse Warm.....	480
Ink from Molding.....	83
Paste from Molding.....	83
Kid Gloves, Cleaning of.....	123
Killing Stumps and Hedge Fences.....	326
Kitchen Convenience and Comfort.....	130
"Memory Card".....	131
Oilcloth Aprons.....	139
Koumyss.....	293
L	
Label Paste.....	81
Lace Curtains, How to Care for.....	116
How to Do Up.....	115

	Page
Mushrooms and Macaroni.....	227
Music	603
Muskmelon, Qualities of.....	204
Mosquitoes, to Drive Away.....	137
Mustard Pickles.....	196
Mustard Plaster, Proper Way to Make..	69
Mutton, Boiled Shoulder of.....	178
Broth.....	157
Ragout.....	179

N

Nail Biting, to Stop.....	312
Nail Wounds in Foot, How to Relieve..	59
Nasturtium Pickles.....	195
New Rope, How to Limber.....	90
Nightingale Food.....	549
No Idle Land for the Farm.....	330
Non-speculative Account.....	616
Noodles (Escalloped) and Oysters.....	166
Nosebleed, How to Stop.....	67
Novel Entertainments.....	607
Novelty Potato Salad.....	200
Nut Desserts.....	277
Nut Salad.....	202
Nut and Fruit Salads.....	201

O

Oat Cake.....	241
Oatmeal, How to Cook Properly.....	229
Sandwiches.....	229
Oatmeal Drink.....	297
Oats.....	355
Official Forms of Address.....	598
Oil Paintings, How to Clean.....	102
Oilcloth, How to Freshen and Preserve	106
Make Wear Well.....	107
Oilcloth Aprons for the Kitchen.....	139
Oilcloth and Rug Suggestions.....	105
Oily Skin, Lotion for.....	301
Old Black Cashmere, How to Make It	
Look New.....	121
Old Bones as Fertilizers.....	334
Old Goods, How to Restore Finish to..	120
Old Hats Made New.....	140
Old Varnish, How to Remove from	
Furniture.....	94
Omelet, Baked.....	231
Celery and Parsley.....	232
Corn Bread.....	231
Egg (Common).....	231
Maryland.....	231
Peach.....	232
Salt Pork.....	231
Snow.....	231
Strawberry.....	232
Onion Pie.....	209
Salad.....	200
Sauce.....	188
Soup.....	161
Onions (Cooked).....	209

	Page
Onions (Cooked) (<i>Continued</i>), Boiled ..	209
Creamed.....	210
Escalloped.....	210
Mashed.....	210
Roast.....	209
Onions, Growing.....	383
Qualities of.....	204
Ophthalmia, or Eye Disease, in Cattle.	499
Orange Luminous Paint.....	85
Orange Macaroon Pudding.....	279
Salad.....	203
Sauce.....	285
Tapioca.....	279
Orangeade.....	296
Orchard, Banking.....	422
Budding.....	423
Enemies of.....	433
Fertilizing.....	420
Forcing Blossoms.....	422
Girdling to Produce Fertility.....	424
Plowing.....	419
Pruning.....	424
Thinning.....	424
Transplanting into Trenches.....	421
Oxalic Acid to Remove Iron Rust from	
Clothing.....	120
Oyster Catsup.....	192
Soup.....	158
Oyster Plant (see Salsify).....	219, 392
Oysters, Curry of.....	166
Fricassee of.....	166
Fried.....	165
Fritters.....	166
Scalloped.....	166

P

Paint, to Remove Finger Marks from..	109
Paint Spots, How to Remove.....	102
Removed from Clothing.....	119
Painted Walls Best for Sick Rooms....	72
Painted Woodwork, How to Clean.....	103
Pan Doudy.....	263
Pancakes.....	250
Adirondack.....	252
Bread Griddle Cakes.....	251
Buckwheat (Yankee).....	251
Corn-meal.....	252
Flannel.....	251
French.....	252
Pumpkin Griddle Cakes.....	252
Rice.....	252
Sweet.....	252
Papering a Room.....	107
Parmesan Croutons.....	162
Parrots, Care of.....	549
Teaching Them to Talk.....	549
Parsnips, Baked.....	214
Fried.....	214
Qualities of.....	205

	Page
Partnership Agreements.....	617
Party Etiquette.....	588
Paste, How to Keep from Molding.....	83
for Mending Rubber Boots.....	79
Pastry, How to Bake.....	155
Pasturage Grasses.....	341
Patient, Care of.....	46
Pea Beans Baked with Tomatoes.....	217
Pea Soup.....	162
Peach Bavarian Cream.....	268
Fritters.....	270
Ice-cream.....	269
Kisses.....	270
Pudding.....	268
Scallop.....	269
Shortcake.....	270
Snow.....	269
Souffle.....	269
Tapioca.....	268
Peach-leaf Curl.....	436
Peach Trees.....	429
Peaches, Compôte of.....	268
Pickled.....	269
Preserved.....	267
Peanut Biscuit.....	241
Salad.....	202
Sauce.....	277
Soup.....	162
Wafers.....	277
Peanuts, Cultivation of.....	412
Pear Pudding.....	270
Pears, Baked.....	271
Compôte of.....	271
Ginger.....	271
Pears, Growing.....	432
Peas in Toast Cases.....	215
Pecan Salad.....	202
Pepper Salad.....	201
Period of Isolation or Quarantine.....	43
Permanganate of Potash.....	39
Personal Hygiene, Suggestions on.....	315
Petrolatum for Farm Tools, Machinery, etc.....	324
Physical Culture (History of).....	569
for Men.....	574
for Women and Children.....	571
General Rules for.....	573
Modern.....	570
Piccalilli.....	199
Pickled Cauliflower.....	197
Cucumbers (Small).....	195
Peaches.....	193
Quinces (Sweet).....	194
Red Cabbage.....	195
Walnuts.....	193
Pickles, How to Keep from Molding.....	191
Pickles and Catsups.....	191
Pickles, Salads and Vegetables.....	189
Pictures Transferred to Glass.....	95
Pie, Butternut.....	254

	Page
Pie (<i>Continued</i>), Cream.....	254
Cream Peach.....	255
Custard.....	253
Date.....	254
Lemon.....	253
Mince.....	255
Pineapple.....	254
Pumpkin (Priscilla's).....	254
Pie-plant, Growing.....	387
Pig-eating Sows.....	520
Pigs (see Hogs).....	516
Pineapple Beverage.....	297
Iced.....	272
Pudding.....	272
Salad.....	202
Pinocle.....	606
Piquette (French "Soft Drink").....	297
Pittsfield Chocolate Cake.....	245
Plaster Casts, Mending.....	97
Plate Glass, How to Make Holes in.....	95
Plowing, Deep and Shallow.....	339
Plum Pudding.....	256
Croquettes.....	257
English.....	255
Plums, Growing.....	431
Poison Ivy, Oak and Sumac, Remedies for.....	57
Poisoned Wounds, How to Treat.....	54
Poisons and Their Treatment.....	54
Polishing Cloth (Best).....	108
Popcorn Balls.....	293
Wafers.....	293
Poppets.....	239
Porcelain Ware.....	133
Pores of Skin, Enlarged or Indented.....	301
Pork.....	182
Apple Garnish for.....	183
Cakes.....	183
Curing of.....	523
Postal Suggestions to the Business Man.....	618
Potato Bugs.....	415
Scab.....	377
Potato Soup.....	160
Potatoes (Cooked).....	206
Baked.....	206
Boiled.....	206
Chowder.....	208
Colonial.....	207
Delmonico.....	207
Escalloped.....	206
Fried, with Egg.....	206
Massasoit.....	208
Parker House.....	207
Potatoes, Growing.....	376
Qualities of.....	205
Potatoes and Cheese.....	208
with Oysters (Manhattan).....	206
Potted Strawberry Plants, Planting.....	397
Poultry Food, Dairy Products as.....	444
Garden Products as.....	444

	Page		Page
Poultry Food— <i>Continued.</i>		Q	
Waste Fruit as.....	444	Queen Bee, Habits and Importance of..	563
Poultry Recipes (Miscellaneous).....	173	Quick Relief for Earache.....	66
Predicaments, Game of.....	608	Quince and Tomato Preserves.....	192
Preserved Citron.....	193	Quinces, Baked.....	272
Preserving and Canning.....	288		
"Professor of Housewifery".....	153	R	
Profit and Loss Account.....	617	Rabbit Pie.....	186
Proper Care of Table Silver.....	128	Spiced.....	187
Food and Its Importance.....	21	Stew.....	187
Foundation for the House.....	31	Rabbits, Care of.....	552
Heating of the House.....	32	Protecting Trees from.....	440
Ventilation for the House.....	32	Radish, Qualities of.....	205
Ways to Wash Dishes.....	131	Rainy-day Etiquette.....	579
Prune Souffle.....	279	Raspberries, Growing.....	398
Puffs, German.....	277	Raspberry Acid.....	297
White.....	277	Sauce.....	285
Pudding, Almond.....	278	Rats, Use of Lime in Driving Away....	90
Apple.....	264	Use of Tar in Driving Away.....	89
Apple and Tapioca.....	262	Rattlesnake Bites Cured by Sweet Oil..	56
Apple Indian.....	262	Favorite Remedy for.....	57
Bachelors.....	264	Real Estate Account.....	617
Baked Pear.....	271	Recipes, How to Measure for.....	157
Batter.....	259	Red Bird, Care of.....	549
Batter and Fruit.....	259	Red Face, Remedy for.....	301
Bread.....	259	Nose.....	301
Bread and Butter.....	259	Red Fancy Work to Be Avoided at	
Brown Betty.....	262	Night.....	142
Brown Bread.....	260	Reduction of Flesh (Rules for).....	314
Cabinet.....	257	Food to Eat.....	314
Christmas.....	256	Double Chin.....	315
Corn-meal.....	260	Exercise to Take.....	314
Cottage.....	258	Hips and Abdomen.....	315
Creole Chocolate.....	276	Regularity of Habits.....	30
Date.....	284	Relieving a Scalded Mouth.....	60
English Plum.....	255	Relish for Fever or Sore Throat Patients	75
Eve's.....	263	Remedy Cupboard, What to Put in It..	51
Fig.....	285	Rhubarb, Qualities of.....	205
Frozen Cabinet.....	258	Rice.....	222
Fruit and Bread.....	260	à la Princess.....	222
Indian.....	261	Baked.....	261
Lemon Rice.....	262	Balls for Breakfast.....	223
Orange Macaroon.....	279	Cakes.....	246
Peach.....	268	Casserole of.....	223
Pear.....	270	Croquettes.....	222
Pineapple.....	272	Cups.....	261
Plum.....	256	Fried, with Cheese.....	223
Queen's.....	260	Parched.....	222
Sauces.....	285	Sauce.....	246
Steamed Chocolate.....	277	Spanish.....	223
Suet.....	258	Rice as a Dessert.....	260
Sweet Potato.....	260	Rice and Cheese.....	223
Swiss.....	258	Rice and Prunes.....	279
Tapioca Caramel.....	257	Roasts, How to Cook.....	155
Toronto.....	262	Robin, Care of.....	550
Variety Fruit.....	257	Roller Towel to Be Avoided.....	113
Pudding Sauce.....	286	Rolls.....	233
Puddings and Desserts.....	255	Root Beer.....	294
Pumpkin Griddle Cakes.....	252	Rose Flavoring Paste.....	149, 150
Pumpkins, Growing.....	392	Rose Jar, How to Make.....	148

	Page
Rose Leaf Suggestions.....	149
Rosewood Stain for Woodwork.....	93
Rotation of Crops.....	339
Rough, Harsh Complexion.....	300
Roup, Remedies for.....	466
Rhubarb, or Pie-plant, Growing.....	387
Rubber Boots, Paste for Mending.....	79
Rugs Made from Old Ingrain Carpets..	106
Rusks.....	234
Rust-proof Cement.....	80
Rusted Stovepipe, How to Renew.....	133
Rye.....	355

S

Safety Paper for Bank Checks.....	84
Salad Cups (Novel).....	203
Vegetables.....	395
Salads, Healthfulness of.....	24
Salads and Salad Dressings.....	199
Sales Account.....	617
Book.....	612
Salsify or Oyster Plant, (Cooked).....	219
Creamed.....	220
in Creamed Sauce.....	220
Croquettes.....	219, 220
Escalloped.....	219
Puddings.....	219
Salsify (or Oyster Plant), Growing.....	392
Salsify Soup.....	161
Salt as a Fertilizer.....	336
Novel Uses for.....	133
Saltpeter for Bugs on Vegetables.....	413
San Juan Ham and Eggs.....	182
Sandwiches, Breakfast.....	184
Chestnut.....	228
Indian.....	184
Mushroom.....	228
Sauces for Meat and Fish.....	188
Pudding.....	285
Sausage.....	183
Creamed Bologna.....	183
Curing of.....	190
Sausage and Rice.....	223
Save the Birds.....	432
Saving Broken Furniture.....	94
Scabies (see Mange).....	487
Scalded Mouth, How to Relieve.....	60
Scaly Leg on Fowls.....	469
Scarecrows—Novel Suggestions.....	359
Scarlet Fever.....	36
Scars, How to Remove.....	303
Scours in Calves.....	503
Swine.....	525
Sealing Wax for Glass Jars.....	133
Seed Box for Flowers.....	409
Seeds, Buying.....	369
Testing.....	369
Where Raised.....	370
Selection of Seeds.....	369
September Salad.....	201

	Page
Shade Trees, Austrian Pine.....	408
Colorado Blue Spruce.....	409
Dwarf Pine.....	408
Evergreen.....	408
Red Cedar.....	408
Scotch Pine.....	408
White Spruce.....	409
Sheep, Best Country for.....	529
Controlling Sex.....	533
Dips and Diseases.....	540
Feed and Feeding.....	531
as Fertilizers.....	530
Hoofs (care of).....	539
Mating.....	532
Mending Broken Bones of.....	542
as Mutton Producers.....	536
Shropshires.....	536
as Weed Exterminators.....	530
as Wool Producers.....	539
Shell Fish.....	165
Sherbets.....	273
Shingles Made Fireproof.....	91
Shoe Polishes.....	124
Shoes, How to Patch with Cement.....	79
Shoes and Gloves.....	315
Shrimps (Buttered) with Eggs.....	167
Shropshires as Mutton Producers.....	536
Shrubs for Screening Foundations.....	146
Sick Rooms, Avoiding Contagion in.....	72
Care of.....	37
Painted Walls Best for.....	72
Plants in.....	72
Temperature of.....	45
Ventilation of.....	44
Silence Cloth, How Made.....	125
Silk, to Cleanse Grease and Paint from.....	117
Silo, How to Build.....	350
Silos and Ensilage.....	349
Silver Fish, Care of.....	552
Silverware, Avoid Wrapping with White Paper.....	129
Simple Household Remedies (Herbs, etc.).....	49
Pudding Sauce.....	286
Single Entry.....	611
Sizing Whitewashed Walls.....	107
Skin Washes.....	315
Sleep and Its Value.....	28
Sleeve Guards for Housework.....	131
Small Fruits, or Berries, Growing.....	396
Smallpox.....	36
To Prevent Pitting in.....	71
Smelts.....	164
Smoke, How to Pass Through.....	54
Smutty Grain, How to Treat.....	357
Soap for the Hair.....	307
How to Test.....	88
Social Correspondence, Art of.....	596
Social Forms and Etiquette.....	576
Sod Land for Corn.....	339

	Page
Soda Lemonade	294
Sofa Pillows—Some Novel Ideas	151
Soft Soap Recipes	87, 88
Soft Water and the Bath	316
Soot, How to Keep Out of Chimneys	91
Sore Throat Patients, Relish for	75
Souffle, Chocolate	276
Vanilla	275
Soup Stock	157
Soups, Recipes for	157
Sow and Her Litter	518
Spaghetti	224
Italian Way of Serving	225
Sparrow Extermination	359
Speculative Account	616
Spiced Giblet Sauce	174
Spinach	213
Chartreuse of	213
Souffle	213
Spinach, Growing	396
Qualities of	205
Spinach and Cream	213
and Eggs	213
Splinter, How to Extract	59
Spots on Clothing—How to Remove	
Them	119
Woodwork	102
Sprain, How to Treat	58
Spring Remedies	74
Sprinkler (Handy)	115
Squabs and Their Breeding	476
Squash, Baked	215
Dulce	215
Qualities of	205
Squash Borers	417
Squirrel Pot Pie	186
Stable Manure	333
Stains, How to Remove from Furniture	
94	
Stair Carpets, Double Service for	106
Stammering Cured at Home	77
Stamping Ink from Dyes	84
Starching, How to Do It Successfully	113
Steel, How to Harden	96
How to Make Holes in	95
Stonework, How to Fasten Iron in	96
Store Fixtures Account	617
Stove Cement for Pipe Joints	80
Polish and Polisher	109
Trimnings (to Clean)	109
Windows (to Clean)	91
Stimulants and Condiments	24
Straw Not to Be Used Under Carpets	101
Straw Hats, to Renovate	141
Straw Matting, How to Clean	106
Strawberry Bed, Care of	396
Street-car Etiquette	581
Street Etiquette for Men	581
Women	577
Stuffed Beet Salad	201
Figs with Whipped Cream	285

	Page
Stuffed Peppers	197
Stumps, How to Kill	326
Styes and Their Treatment	65
Succotash	215
Suffocation, How to Treat	63
Sugar Sirup	292
Sulphur to Bleach Flannels	112
for Cellar Mold	90
Sulphurous Acid	40
Sunstroke and How to Treat It	64
Suppers	602
Surface Burns, How to Relieve	59
Surface Wells, Danger of	33
Sweet Apple Chutney	192
Sweet Pickled Quinces	194
Sweet Potato Croquettes	208
Pone	208
with Sausage	209
Sweet Potatoes, How to Keep	378
Sweet Tomato Pickle	198
Swine (see Hogs)	516
Swiss Chard, Growing	395
Sympathetic Inks for Secret Writing	83

T

Table Centerpieces, Suggestions for	128
Linen, Laundering of	126
Pieces, Growing Ferns for	145
Silver, Proper Care of	128
Table Etiquette	587
Table Linen and the Dining Table	125
Tar Used in Driving Away Rats	89
Tar and Turpentine for Diphtheria	70
Tar Spots Removed from Clothing	119
Tarnished Brass, Cleaning and Polish-	
ing	109
Tin, Cleaning	132
Tarpaulins, Waterproof Canvas for	98
Tattoo Marks, How to Remove	302
Tea, Coffee and Other Drinks	24
Tea Cakes	234
Temperature and Pulse	46
Tent Caterpillar	439
Thanksgiving Table, Decoration of	127
Thermometer, Use of, in Cooking	156
Thirst, How to Relieve, in the Patient	48
Tickling in Throat, Egg Gargle for	230
Timbales, Meat or Fish	185
Time for Mating Sheep	532
Timothy Crop	340
Tin vs. Earthen Dishes	157
Tincture of Roses, How to Make	149
Toad as an Insecticide	415
Togus Loaf	242
Toilet Cream (simple)	311
Soap Scraps	118
Tomato Catsup	191
Cheese (New)	192
Farces	211
Preserves	192

INDEX

639

	Page
Whirlwind, Game of.....	608
Whist, Etiquette of.....	604
French.....	605
White Cloth, to Remove Mildew and Stains from.....	117, 121
White Icing for Cake.....	248
White Ink, Recipe for.....	82
White Mice.....	552
White Rats.....	552
White of Egg, Medical Uses of.....	71
White Skirts, How to Make Stiff.....	114
Whitewash Recipes.....	86
Who Knows That Nose? Game of.....	609
Whoopingcough.....	37
Windows, Easy Way to Clean.....	101
Winter Food for Chickens.....	451
Poultry House.....	449
Woman's Toilet.....	298
Women, Street Etiquette for.....	577
Women and Children, Physical Culture for.....	571

	Page
Wood, How to Keep, from Splitting...	99
How to Preserve, from Decay.....	92
for Repairs.....	326
Made Fireproof.....	92
Wood, Water and Ice for the Farm....	325
Wood Ashes as a Fertilizer.....	333
Woodenware and Cooking Tins.....	133
Woodwork Stains.....	93
Wool Sheep, Best Varieties of.....	539
Woolen Clothing, Advantages of.....	25
Woolen Goods—to Shrink Properly....	111
Woolly Aphis.....	441
Worms in Horses.....	485
Sheep.....	541
Worn Tablecloths, Good Uses for....	127
Writing Ink from Dyes.....	84

Y

Yellow Luminous Paint.....	85
Yellowish Brown Luminous Paint.....	86
Yorkshire Pudding.....	242

ONE COPY RECEIVED

MAR 18 1904

589643

L. H. C.

March 17

M. - 12

1 COPY DEL. TO CAT. DIV.

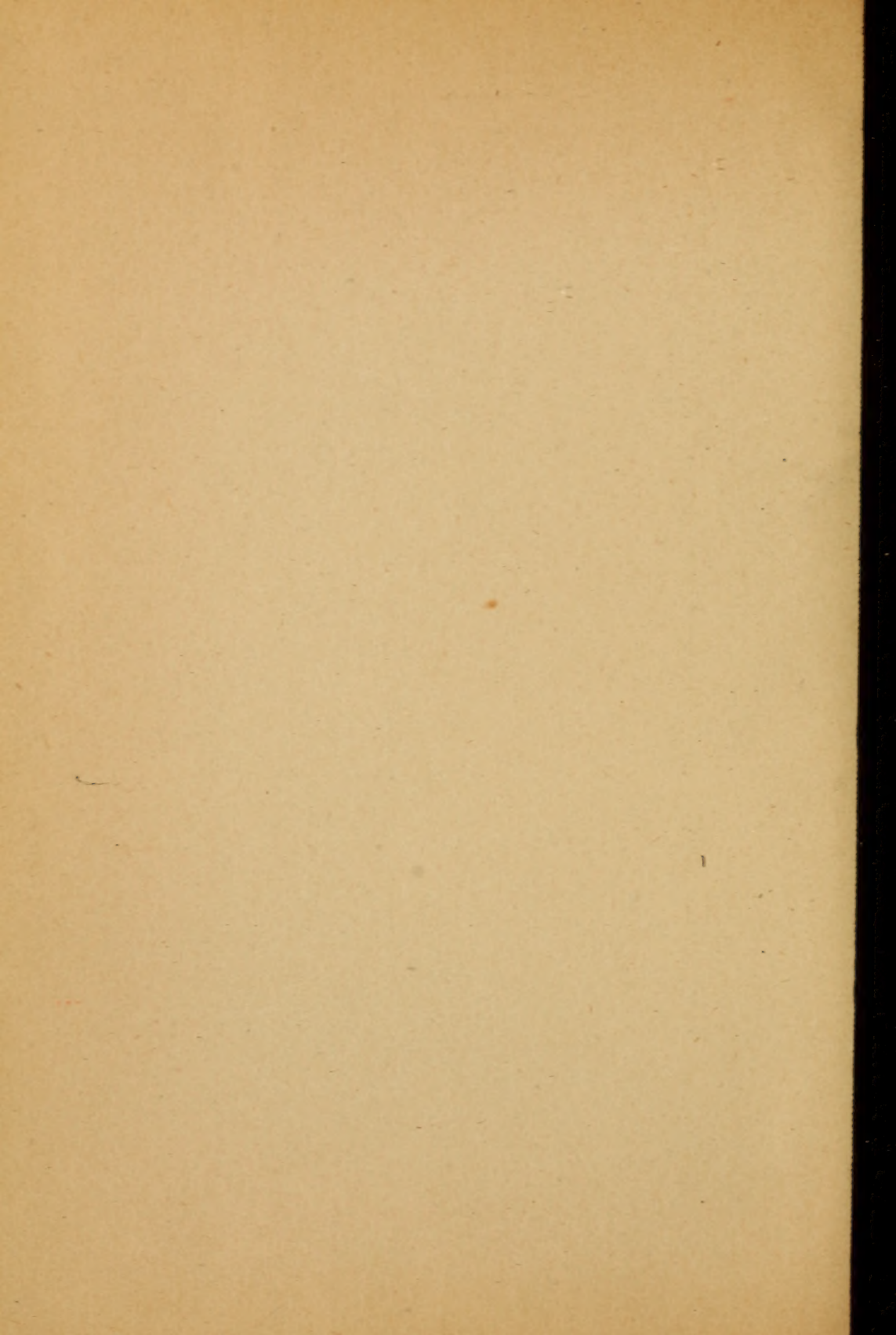
MAR 18 1904

MAR 23 1904









LIBRARY OF CONGRESS



0 014 184 173 7 •